USER MANUAL

Version 2.02

CE 0459

CE certificate for the ultrasound scanner Imagyne obtained in 2008.

Imagyne reference: 90-1933 Indice A
User Manual reference: 70-2180

Warning:

This manual must be read before using the equipment.

Manufacturer's address:
ECM
126 bd de la République
F-16000 Angoulême
Tél : +33 5 45 92 03 57

Distributor's address:
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…….
…….
…….

SUMMARY

1. Introduction

This manual includes all necessary information for installing and using the Imagyne ultrasound equipment.
Imagyne is an ultrasound device for diagnostic imaging.
Entirely digital, PC-based and using FPGA technology, Imagyne provides imaging in B, M and CFM modes as well as Doppler spectrums and CW. Real Triplex is also provided (B/CFM/PW).
Imagyne provides post-processing, meaning adjustment of imaging controls on frozen and stored images for a secure and facilitated diagnostic.
Imagyne is developed for the following applications: General, Abdominal, Cardiology, Gynecology, Obstetrics, Pediatrics, Small parts, Urology, Vascular.

2. Safety instructions

2.1 Safety instructions for ultrasound equipment

2.1.1 User profile

 Warning:

This equipment must be used only by a user trained to the ultrasound imaging technique. This training allows the understanding of displayed ultrasound images, the understanding of how to perform measurements on images or on Doppler spectrums. The user must have read the complete user's manual in order to know the instructions needed to operate the equipment. He must refer to the user's manual at any time in case of doubt about the use of the device.

 Warning:

It is mandatory to read the user's manual before starting an examination. People which are not trained to ultrasound diagnostic imaging technique must not use the Imagyne equipment.

2.1.2 Acoustic power

The AIUM (American institute of Ultrasound in Medicine) has stated on the use of ultrasound for medical diagnostic that "no confirmed biological effects on patients or instrument operators caused by exposure at intensities typical of present diagnostic ultrasound equipments have ever been reported. Although the possibility exists that such biological effects may be identified in the future, current data indicate that the benefit to patients of the safe use of diagnostic ultrasound outweigh the risks, if any, that may be present". The institute indicates that the benefits of a safe use of diagnostic ultrasound outweigh the risks, if any, which may be present.

References: Bioeffects considerations for the safety of Diagnostic Ultrasound; Journal of Ultrasound in medicine; Vol. 7, Number 9; American Institute of Ultrasound in Medicine – Bioeffects Committee.

 Warning:

"Safe use" means that the ultrasound scanner must be used according to the ALARA principle, meaning that the operator must maintain the transmit power level and the length of the exposure at the lowest possible level (As Low As Reasonably Achievable).

Consequently, the operator must use the ultrasound in a safe way, in order to ensure the maximum protection of the patient. This means that the operator must assume that there might be unidentified risks during the use of ultrasounds, and therefore reduce the exposure time of the patient as well as the transmit power. This can be done by following the ALARA principle (As Low As Reasonably Achievable), which associates some simple rules for obtaining a diagnosis while using the least amount of acoustic energy.

How to perform a safe examination:
- When starting an examination, always adjust the transmit power at the lowest possible level. Increase the power during examination if necessary in order to obtain a satisfactory image or Doppler signal, while keeping the review of MI and/or TI indexes.
- Do not hold the probe in a fixed position longer than necessary. As soon as the image has been frozen, take the probe away from the patient's skin.
- Do not continue the examination longer than necessary: It is important to reduce the time of patient exposure to ultrasounds as much as possible.

2.1.3 Interpretation of MI and TI parameters

It is the operator's responsibility to foresee the risks linked to the output energy of the device, and to act appropriately in order to obtain the necessary diagnostic information with a minimum risk for the patient.
In order to do this, the operator has two indexes displayed on the screen (MI and TI, respectively Mechanical Index and Thermal Index) enabling him to continuously have an indication of the acoustic transmit power level.

The relationship between different parameters of acoustic power and biological evaluation criteria is not well known today. Two fundamental phenomena have been identified, mechanical and thermal, through which ultrasounds might have biological effects. The MI and TI indexes have been developed to take these phenomena into account and to give the user immediate information on the potential mechanical or thermal biological effects. Please notice that these indexes do not take accrued effects into account.

The MI index (mechanical index) is related to the spatial peak of the maximum rarefaction pressure, providing an indication according to the cavitation effect. There is a strong agreement that biological effects can possibly occur with an increase of the maximum rarefaction pressure.

The TI index (thermal index) is related to the tissue temperature rise and corresponds to the ratio between the total acoustic power and the acoustic power required to raise the tissue temperature by one degree Celsius. There is no simple model to represent the temperature rise in all conditions and for all type of tissues. A TI index of 2 represents a higher temperature rise than a TI index of 1, but cannot be considered as a temperature rise of 2°C. The TI index is intended to advise the user of a possible temperature rise in a specific area.

2.1.4 Accuracy of MI and TI parameters display

The mechanical and thermal indexes are displayed permanently and explicitly on the screen in the upper right corner. See chapter 5.2.
During the use of the device, the operator must survey the effect of the controls which are influencing the acoustic power and, if necessary, write down the values of the indexes.
As indicated above, the operator must permanently try to maintain the indexes at their lowest possible level and to reduce the exposure length.
The preciseness of the display of the mechanical and thermal indexes (MI and TI) is at 0.1.

2.2 Safety symbols

Please note the meaning of the following safety symbols:

Symbol	Signification
	Type BF patient applied part (B=body, F=floating applied part) The probe complies with the class “BF” Medical Electric equipment compliant with the standard IEC 60601-1
	**Warning:** Read the user manual before using the device bearing this symbol.
	Warning : do not sit on the equipment
	Warning : do not push the equipment if the castor wheels are locked
	On/off switch
O / I	General power switch

	Collect separately from other waste (see European Commission Directive for electronic waste)
CE	CE Mark

2.3 Environmental conditions of use

The device shall be operated in a clean atmosphere, without dust and smoke.

The device is designed and tested to be operated within this range of temperature:

- -20°C to +60°C during transportation and storing
- +10°C to +40°C during operation.

The device is designed to be operated with a relative humidity range from 10 to 95% including condensation.

The device is designed for the following atmospheric pressures:

- 700 hPa to 1060 hPa while in operation
- 500 hPa to 1060 hPa during transportation and storing.

 Warning:

Never use the device if these environmental conditions are not respected. Stop operation of the device if one of these conditions is no more respected.

The device can be used in any room or place respecting these environmental conditions.
In order to ensure proper cooling of the device, do not block the ventilation fans or obstruct the air exhaust at the rear of the device. Do not place the equipment against a wall or in a confined area, this will result in a bad cooling of the equipment. A minimal distance between walls and the device must be respected, typically 30 cm.

 Warning:

Never block the fans or obstruct air exhaust, this will lead to overheating of the device and compromise proper operation of the system.

2.4 Electrical safety

This equipment is compliant with IEC standard 60601-1, Safety for Medical Electrical Equipment.

According to the standard, the equipment is classified as:

a) According to the type of protection against electrical shock:

Class I equipment

b) According to the degree of protection against electrical shock:

Type BF

c) According to the degree of protection against harmful water ingress:

IPX0 (device without protection against water ingress)

d) According to the degree of safety of application in presence of flammable anaesthetic mixture with air, oxygen or nitrous oxide

Device not suitable for use in the presence of a flammable anaesthetic mixture with air, oxygen or nitrous oxide

e) According to the mode of operation:

Continuous operation

In order to ensure patient safety, please observe these warnings:

 Warning:

The equipment must be maintained in the exact same configuration as it was delivered by ECM. It is forbidden to bring any change to the equipment without permission of ECM.

 Warning:

The equipment must be supplied by using the provided power cord including a connection to ground.

 Warning:

All connected peripherals requiring power (printer, monitor, USB peripherals or others) must use an insulation transformer or must comply themselves with the standard EN 60601-1-1. Otherwise the global configuration can no longer be considered patient safe.

 Warning:

A risk of electrical shock may exist if the system is not properly grounded. The system must be connected to the electrical power network by a three-hole outlet with a connection to ground.

 Warning:

Removing the power cord from the equipment may be used a s a safety action. Always place the equipement in a situation where the operator can easily access to the power cord to remove it quickly and safely if needed.

 Warning:

Always inspect the probe head, housing, cable and power cord before use (see section 2.8: probe information). Any crack or damage to the probe head can lead to electrical shock. Never use a probe that is damaged, that has been dropped or has been suffering a severe shock until it has been inspected by an ECM customer service engineer.

 Warning:

Do not soak the transducer connector in any liquid. Soaking it can destroy its electrical safety features.

 Warning:

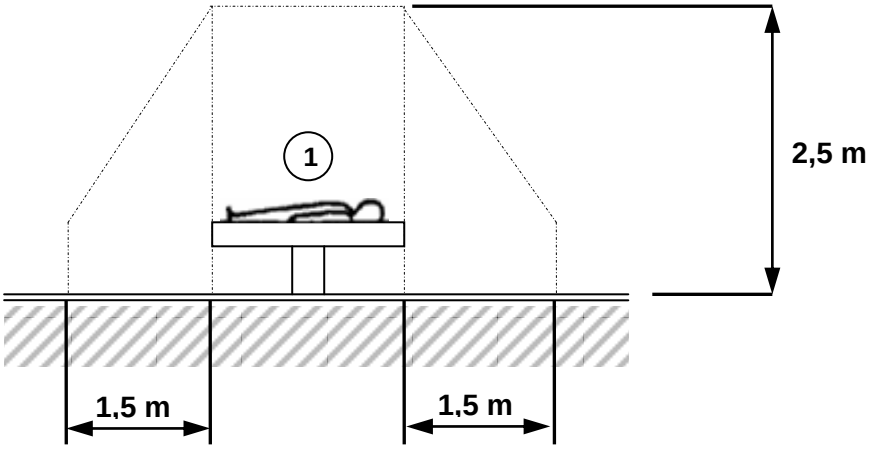
Always disconnect the system prior to cleaning.

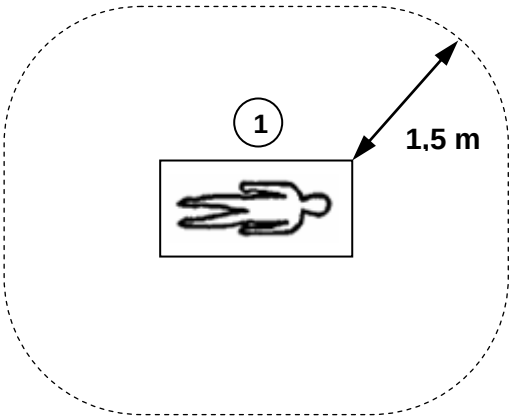
 Warning:

Only the ECG kit (cable and suction cups) provided by ECM can be used on the ECG output on the device.
ECM references for the ECG kit:
ECG cable: 31-1994
ECG suction cups: 31-1995.

2.5 Patient environment

The Imagyne ultrasound scanner is designed to be used in an environment as defined on the figure below:





2.6 Electromagnetic compatibility

The Imagyne ultrasound scanner is compliant with the standard EN 60601-1-2 concerning electromagnetic compatibility (EMC).

Warning:

The Imagyne ultrasound scanner is a medical electrical device which needs special care regarding the EMC. The equipment should be installed and started by a trained person according to the detailed information in this manual (refer to annex II).

Warning:

Portable communication equipments can affect the normal function of the Imagyne equipment (refer to table 6 of annex II).

 Warning:

The use of cables or accessories others than those specified by ECM may result in an increase of emission or a reduction of immunity of the Imagyne device (refer to paragraph 20 peripherals).

 Warning:

The equipment should not be used close to other equipments, and if it is not possible to do differently, the functioning of the Imagyne device should be monitored in order to check that it is working normally.

2.7 Probe and equipment compatibility

The probes supplied with the Imagyne equipment are intended to be used only with this system.

 Warning:

Never try to connect the supplied probes to any other ultrasound system. This can lead to irreversible damage on the probe connector and to the possibility of much higher acoustic output than required. This can also lead to patient burn due to overheating of the probe.

The Imagyne device is designed to be used exclusively with probes supplied by ECM together with the device.

 Warning:

Never try to connect a probe to the Imagyne device which is not supplied by ECM and described to fit the Imagyne equipment. This can lead to irreversible damage on the Imagyne probe connector and to the possibility of much higher acoustic output than required. This can also lead to patient burn due to overheating of the probe.

 Warning:

Check the cleanliness of the probes before starting an examination. Also check the probe in order to detect any shock, crack or damage on the casing and the acoustic lens. Never use a damaged probe for an examination.

 Warning:

For safety and maintenance reasons, never disconnect a probe from the device without freezing the system first.

2.8 Probe information

2.8.1 Probe types and corresponding applications

The probes provided with the Imagyne device are the following:

- C360V Convex probe, central frequency 3.5 MHz. This external probe is used for the following applications: General, abdominal, gynecology, obstetrics, vascular.
- C360A Convex probe, central frequency 3.5 MHz. This external probe is used for the following applications: General, abdominal, gynecology, obstetrics, vascular.
- C360R Convex probe, central frequency 3.5 MHz. This external probe is used for the following applications: General, abdominal, gynecology, obstetrics, vascular.
- L738P Linear probe, central frequency 7.5 MHz. This external probe is used for the following applications: General, vascular, pediatrics, small parts (breast, testis etc.).
- C614P Micro-convex probe, central frequency 6 MHz. This external probe is used for the following applications: General, vascular, small parts, pediatrics.
- P320R Phased Array probe, central frequency 2.5 MHz. This external probe is used for the following applications: General, cardiology.
- E610A Endo-cavity probe, central frequency 6.5MHz. This probe is used through the rectum or through the vagina for the following applications: General, gynecology, obstetrics, urology.

- E610R Endo-cavity probe, central frequency 6.5MHz. This probe is used through the rectum or through the vagina for the following applications: General, gynecology, obstetrics, urology.
- 4DC540V Volumetric convex 4D probe, central frequency 4.5 MHz: This external probe is used for the following applications: General, abdominal, gynecology, obstetrics, vascular.

The indicated applications can be examined in B, M, PW or CFM modes or in combined modes.
The cardiology application can be examined also in CW mode.

 Warning:
Do not use the probe for any other application than the one specified, since the probe type and frequency are related to the clinical application. This can lead to bad diagnostic resulting from a non-adapted image quality. It can also lead to useless irradiation of the patient, which is contrary to the ultrasound imaging safety guidelines.

All probes provided with the Imagyne device are compliant with the standard ISO 10993-1 concerning biocompatibility of components used for probe manufacturing.

References for Biopsy needle guides:
Provider CIVCO: www.civco.com
Linear L738P: Bracket reference Civco 612-085, to be used with needle guide 610-608, compatible with the needles 8.5FR and gauge 14 to 23 (except gauge 19). This bracket reference is a re-usable bracket.
Endo-cavity E610A: Reference (bracket and needle guide) Civco 610-604 (or 610-605), compatible with needles gauge 16 to 18.
Endo-cavity E610R: Reference (bracket and needle guide) Civco 610-987 (or 610-988), compatible with needles gauge 16 to 18.

Provider PROTEK: www.protekmedical.com
Convex C360V and C360A: Bracket reference Protek 7138, to be used with needle guide ref 4222 (22 Ga), ref 4218 (18 Ga), ref 4216 (16 Ga). This bracket reference is a re-usable bracket; needle guides are disposable.

See chapter 6.11 on Biopsy needle guide in B imaging.

2.8.2 Inspection of probes

 Warning:
Before each use, inspect the transducer lens, case and cable. Check for cracks or other damages that may allow liquids to enter the transducer.
If you find any damage, do not use the probe until it has been inspected and either repaired or replaced by an authorized ECM customer service engineer

 Warning:
Any crack or damage to the probe head can lead to electrical shock. Never use a probe that is damaged, that has been dropped or has been suffering a severe collision until it has been inspected by an ECM customer service engineer.

In case of failure or replacement of a probe, the damaged probe must be recycled. Take care of bringing the probe to a certified recycling center or return it to the distributor. The distributor's address is found on the first page of this manual.

2.8.3 Handling of probes

 Warning:

The probe is fragile and requires proper handling, care and cleaning. Transducer care includes daily inspections, cleaning and disinfections between each patient.

Please refer to chapter 22.2 about how to perform proper care to the probe.

 Warning:

Always place the probe in the probe holder placed on the keyboard or in another secured place when not used in order to avoid it from falling either on the patient or on the floor. Any crack or damage to the probe head can lead to electrical shock. Never use a probe that is damaged, that has been dropped or has been suffering a severe collision until it has been inspected by an ECM customer service engineer.

 Warning:

Do not bend or twist the transducer cable. If the transducer housing becomes cracked or broken or if there are cuts or openings in the cable, the electrical safety features of the transducer might be compromised.

 Warning:

Do not immerse the transducer connector in any liquid. Immersing it can destroy its electrical safety features.

2.8.4 Ultrasound coupling gel

Some ultrasound coupling gels and lotions can damage the probes.

Agents containing the following chemicals are known to damage transducers:

- Acetone
- Methanol
- Denatured ethyl alcohol
- Mineral oil
- Iodine
- Any lotion or gel that contains perfume.

 Warning:

Check the gel contents with your gel supplier.

 Warning:

To avoid any problems regarding the use of ultrasound coupling gel, please respect the following rules:

- Always check the expiry date on the gel bottle prior to use on a patient. Always throw expired bottles away.
- Choose 250ml conditioning rather than 5 liters. Never use a 5 liters bottle to fill smaller bottles each day.
- Throw away all started bottles at the end of the day.
- Before the probe disinfection procedure between each examination, wipe off all gel residues on probe head, housing and cable.

 Warning:

Neither the ultrasound coupling gel nor the external probes are intended for use on a damaged skin.

2.8.5 Surface temperatures

The probes provided with the device are compliant with the security standards concerning surface temperatures. The probes have been designed in order to never let the surface temperature exceed 41°C.

 Warning:

The Imagyne device has not been designed to be used together with a high frequency surgical device. A risk of patient burn might exist in case of failure in connection of the neutral electrode of the surgical high frequency device.

2.9 End of product life of the device

At the end-of-life of the device, due to a reject or a definitive end of use, the device must be recycled. Take care of bringing the device to a certified recycling center or return it to the distributor. The distributor's address is found on the first page of this manual.

3. Installation of the equipment

The Imagyne device must be installed on site by a person authorized by ECM.

 Warning:

Never try to open the equipment. Only an ECM qualified customer service engineer is authorized to open the system and service it.

 Warning:

After installation, check that the mechanical components (LCD screen, screen arm) are properly attached and that there is no risk for them to fall or move in unexpected ways.

 Warning:

When moving the device, take care of avoiding any mechanical shock or collision due to the important inertia of the equipment.

 Warning:

When adjusting the height of the keyboard, take care of avoiding pinching your fingers between the screen arm and the upper part of the equipment.

4. Getting started

4.1 Connection and disconnection of probes

To connect a probe, put the probe connector in the opening provided for this purpose on the front of the device, with the cable pointing downwards. Turn the locker situated in the middle of the connector with a slight pressure in order to engage the locking mechanism. When the locking mechanism is engaged, make a quarter turn clockwards so that the probe is connected.

After connecting a probe, always place the probe in one of the probe holders placed on the device in order to avoid any damage of the probe due to a shock or falling down.

The probes can be changed duirng the examinaton without restarting the device.

To disconnect a probe, make a quarter turn counter-clockwards in order to unlock the connector. Take the connector out of the device and store the probe in an appropriate place protected from shocks.

 Warning:

Before disconnecting the active probe, make sure to freeze the image.

When starting the device, always make sure to have a probe connected on the first connector (Probe 1).
The connected probes are indicated in the right bottom of the screen. The currently active probe is highlighted.
The volumetric convex 4D probe 4DC540V should always be connected on the first connector port (Probe 1). Other probes can be connected on all connector ports,

4.2 Adjustment of keyboard height

To adjust the vertical position of the keyboard, unlock the keyboard by lifting the handle located on the left hand side of the keybaord between the probe holders. After adjusting the keyboard position by lifting or pushing down the keyboard, release the handle to lock the keyboard in the desired position.

4.3 Starting of the device

 Warning:

Before starting the equipment, check the voltage selection situated at the back of the equipment. To change the voltage selection (115 or 230 VAC), take out the fuse drawer and turn it upside down before putting it back. After re-inserting the fuse drawer, the selected voltage is displayed in the window provided for this purpose.

 Warning:

Only the power cord supplied by ECM with a ground connection must be used to power the device. Never use a power cord without proper ground connection.

To start the equipment, turn on the general power switch with the following symbol:

O / I

situated on the lower rear part of the device.

Then press the On/off switch with the following symbol

situated on the middle rear part of the device.
Then wait until the system starts and displays the user interface on the screen.

The Imagyne equipment starts in B mode with the probe connected on the first probe connector. If no probe is connected to the first right hand side probe connector, the system will display a message “No probe or unknown probe”. In this case, connect a probe to the first right hand side connector and click on “Retry”.

To stop the equipment, click on the cross situated in the upper right corner of the screen. A shutdown procedure will be performed until the complete stop of the equipment.

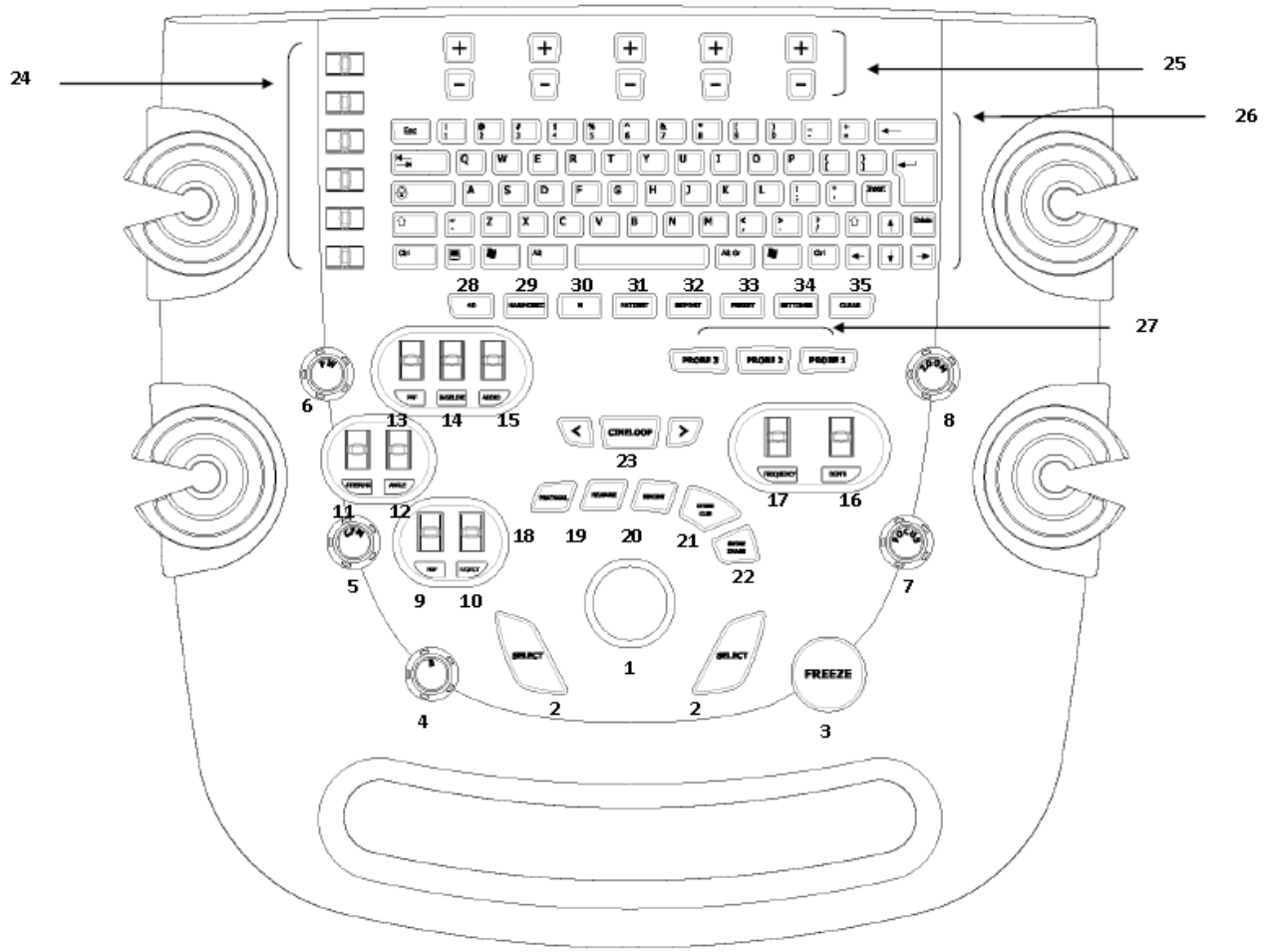
A forced stopping of the device (that should only be used in case of malfunctioning of the device) can be made by pressing for a short while the On/off switch with the following symbol:

When you are no longer using the device and have shut it down, it is recommended to switch off also the general power switch situated on the lower rear part of the device in order to turn the electricity supply of the device completely off.

 Warning:
After turning off the equipment, it may be necessary to wait for about one minute before restarting the equipment, to avoid having the electronical device not ready to start and the display of an error message. In this case, shut down the equipment and wait for a minute before restarting it.

5. Presentation of the device

5.1 Keyboard – illustration



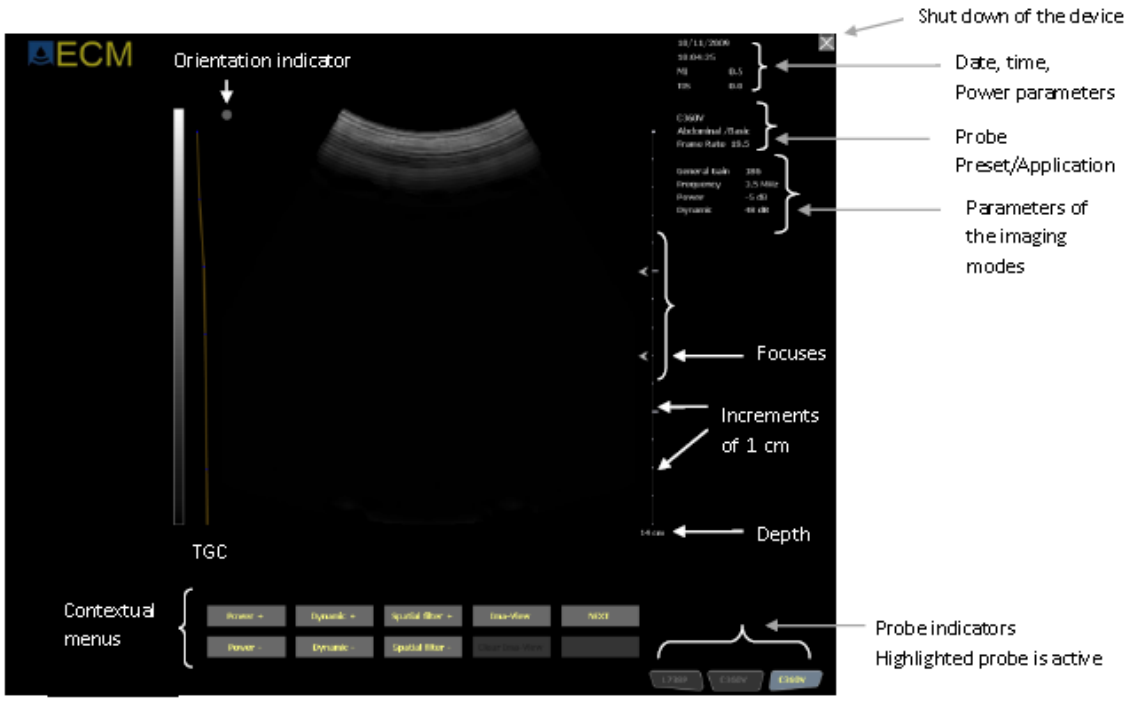
See the explanation of each key below.

5.1.1 Keyboard – explanation

Number	Key	Description	Chapter
1	Track ball	Selection, adjustment and moving of objects on the screen.	
2	Select	Selection of objects on the screen and validation of system controls. When right and left Select button have different functions, the right button selects and blocks or goes from one marker to another, and the left button validates.	
3	Freeze	Freezing and de-freezing of the image.	13
4	B	Activation of the B Mode by pressing. Adjustment of the general B gain by turning. Display of the contextual B menu.	6
5	CFM	Activation and deactivation of the CFM mode by pressing. Adjustment of the CFM gain by turning. Display of the contextual CFM menu. Adjustment of opacity in 4D mode by turning	8 12
6	PW	Activation and deactivation of the Pulsed Wave mode by pressing. Adjustment of the PW gain by turning. Display of the contextual PW menu. Activation of Continuous Wave mode (when ticked on the Settings page). Adjustment of CW gain by turning. Display of the contextual CW menu. Adjustment of luminosity in 4D mode by turning	9 11 12
7	Focus	Increase and decrease of the number of focuses in B mode by pressing. Positioning of focuses by turning. Depth exploration by turning in 4D mode: Explorer 3D.	6.5 12
8	Zoom	Activation and deactivation by pressing of one of the two zoom modes chosen in the Setting menu. Increase and decrease of the zoom scale by turning. Increase and decrease of the Noise Reject in B mode by turning. Activation of Rotate function in 4D by pressing, rotating by turning	6.6 6.8 12
9	PRF (CFM)	Increase and decrease of PRF in CFM mode.	8.5
10	Reject	Increase and decrease of the reject of slow flows (noise) in CFM mode.	8.7
11	Steering	Activation and adjustment of the steering of the CFM box and the PW gate line.	8.6 9.6
12	Angle	Activation and adjustment of the angle correction in PW mode.	9.7
13	PRF (PW)	Increase and decrease of the PRF in PW mode.	9.5
14	Baseline	Adjustment of the baseline in PW and CW modes.	9.8 11.4
15	Audio	Adjustment of the sound level (PW and CW sound and acoustic indicators).	9.10
16	Depth	Increase and decrease of the exploration depth.	6.1
17	Frequency	Increase and decrease of the frequency in each imaging mode.	6.2, 8.3, 9.2

18	**Protocol**	Access to the selection menu of measurements, tables and calculations according to each application. Exit of the menu by pressing again.	18
19	**Measure**	Freezing of the image and possibility to make measurements on the frozen image or sequence of images. Display of the contextual measure menu. Return to the frozen sequence of images by pressing once again.	15
20	**Review**	Management of stored images and sequences of images (review, export, rename, delete). Display of the contextual Review menu. Exit of Review by pressing once again.	14
21	**Store clip**	Storage of a sequence of frozen images.	14
22	**Store image**	Storage of a frozen image.	14
23	**Cineloop** **<** **>**	Activation and pausing of the reading of the last saved sequence of images. Playing the sequence backwards image by image. Playing the sequence forwards image by image.	13
24	**(Rocker switches)**	Adjustment of the TGC gain.	6.4
25	**(Contextual keys)**	Selection, activation and deactivation of contextual menus according to each imaging mode and function.	
26	**Alphanumeric**	Entering of text and numbers.	
27	**Probe 1, 2, 3**	Changing of probes.	4.1
28	**4D**	Activation of the 4D imaging mode by pressing.	12
29	**Harmonic**	Activation and deactivation of the Pulse Inverse Harmonic function.	6.21
30	**M**	Activation and deactivation of the M mode.	7
31	**Patient**	Access to Patient files. Exit of Patient menu.	19
32	**Report**	Access to the on-going examination report when a patient file is open.	20
33	**Preset**	Access to the list of applications and presets. Display of the contextual Preset menu. Exit of the Presets.	17
34	**Setting**	Access to the menu of general settings of the device. Exit of the menu.	5.4
35	**Clear**	Exit of Settings, Patient, Report, User protocols and Annotations, Export/Import/Archive/Consult reports, User short key, Multiview. Exit from a loaded image or sequence.	

5.2 Screen


Shut down of the device
Orientation indicator
Date, time,
Power parameters
Probe
Preset/Application
Parameters of
the imaging
modes
Focuses
Increments
of 1 cm
Depth
TGC
Contextual
menus
Probe indicators
Highlighted probe is active

5.3 Contextual menus

Each of the following modes and functions activate a contextual menu, according to the used mode: B, M, CFM, PW, CW, B/CFM/PW, 4D, Freeze, Review, Measures, Protocol, Preset.

The contextual menu is displayed on the bottom of the screen. It is composed of 5x2 keys.

The contextual menu is controlled with the contextual keys (Keys number 25) or by placing the curser on the menu and clicking Select with the Select key.

The contextual menus can have from one to several levels, according to the used mode. To go from one level to the next, press the key Next (either with the contextual keys or with the trackball and Select). To return to an inferior level in the contextual menu, press the key Previous.

5.4 Settings (Key number 34)

Access to the menu of general settings of the device by pressing the key Setting.
Place the trackball on the wanted function, press Select with the left Select button to validate.

Hospital Name: Possibility to enter the hospital or clinic name with the alphanumeric keyboard. Maximum 20 characters.

User Name: Possibility to enter the user name with the alphanumeric keyboard. Maximum 20 characters.

System date: Adjustment of date.

Date format: Choice of date display: DD/MM/YY, YYYY/MM/DD, MM/DD/YYYY. The selected date format is used for all other dates (Patient birthday, LMP date etc.).

System time: Adjustment of time.

Time format: Choice of time display: 12h AM/PM or 24H.

Language: Choice of language for the interface (menus at the screen): English, French, Spanish etc.

Body marks: Possibility to show the body marks. The activation by ticking the box makes a body mark appear on the image. Click on the body mark to see the whole list according to the active application and preset. Click Select on the wanted body mark. The whole list disappears automatically. Click on the yellow probe indicator on the body mark to reposition the probe indicator. Click Select Right to turn the probe indicator. The round spot corresponds to the orientation marker on the probe itself. Click Select Right to return to the repositioning. Click Select Left to validate.

Image format: Choice of image format when saving: jpeg (.jpeg), bitmap (.bmp) and/or Dicom (.dic) by ticking the boxes. The format imagenv (raw data) is always saved simultaneously.

Clip format: Choice of clip format when saving a sequence: avi and/or Dicom by ticking the boxes. The format clipenv (raw data) is always saved simultaneously.

Zoom: Choice of zoom mode: Full screen or Picture in Picture. See the paragraph 6.6 for a complete description of the two zoom modes.

Autofreeze: Choice of the time of non-use before passing automatically into freeze mode: 5, 10 or 15 minutes.

Stenosis tools: Choice of ellipse or Trace used for measuring stenosis.

Annotations: When ticking the box, the arrow is placed before the text box when adding an annotation. Otherwise, the textbox is placed before the arrow. See chapter 15.1.6 about annotations.

Distances: Choice of automatic appearance of 4 successive distances in measure mode. Otherwise, one automatic distance appears, and further measure selections are made in the contextual menu. See chapter 15 about measures.

B Measures values on US image: If the box is ticked, the values of the B measures are displayed on the image near to the measurement itself. If the box is not ticked, the values are displayed in the lower left part of the screen. See chapter 15.

PW automatic control: Choice of automatic adjustment in PW of the angle and/or the steering by ticking the circle. Options: None, Angle or Angle and Steering. See chapter 9.7.

PW angle on start: If the box is ticked, the automatic angle correction will be active when turning on the PW mode. See chapter 9.7.

Background color: Choice of background color: Black, Dark grey, Grey, Light grey.

US image: Selection of reduced image size by ticking the box.

Auto Focus: If the box is ticked, the frequency and focuses will be automatically adapted according to the change of depth. If several focuses are used on the image, the automatic focus will be the upper one, the other focuses will be placed deeper.

PW starts CW: When ticking the box, pressing PW will always activate CW when using the phased array probe in cardiology application. Activation of PW in the contextual B menu. When the box is not ticked, activation of CW in the contextual B menu. See chapter 11.

Report printing on thermic printer: Selection between USB and video-out connection for the thermal printer. See chapter 21.1 for a summarizing table of out-puts. See chapter 20 about reports.
Video-out connected thermal printer: Printing by pushing the button on the printer. Display the patient report in Print Preview and print each displayed page one after the other.
USB-connected thermal printer: Printing by pressing Print on Imagyne's screen (contextual menu or report menu). Selection of the delay between each printed page of the report when printing on thermal printer. Options: from 0 to 5 seconds or Manual. When the box is ticked, a border is drawn at the separation of each page. See chapter 21.2 for details about printing reports on USB-connected thermal printers.

Upgrade: Possibility to upgrade the software with a support provided by ECM. Insert the ECM upgrade CD in the CD drive, press Upgrade. The device asks you to restart Imagyne. Click OK. The system shuts down automatically. Wait 20 seconds before restarting the device. The system is now upgraded and the new software number is displayed.

Printer:
Add Printer: Adding of a printer (PC printer or USB-connected thermal printer) with the use of the printer driver, launching of the installation assistant. Several printers can be installed. It is recommended to switch off the device and restart it between each printer installation.
Default Printer: Selection of default printer when several printers are installed.
Select Printer at print image: When several printers are installed, selection of printer at each print when ticking the box. Otherwise, use of default printer at each print.

DICOM settings: Access to DICOM settings for printing, Storage and Worklist. Exit by pressing Clear.

User protocols and annotations:
User protocols: The upper half of the window allows each user to make an individual choice of tables, measures and authors according to each application. The activation of existing User Protocols is made on the patient page. See the paragraphs 18 (Protocols) and 19 (Patient File) for details.

Annotations: The lower left half of the window allows the user to enter annotations in each Application. Select the wanted application in the upper half window in the list. In the lower half window, enter the text in the empty field with the alphanumeric keyboard. Add the annotation by clicking Add. The annotation is added to the list. Click Beginning, Before, After or End to change the order of annotations. Click Delete to erase the selected annotation.
The annotations are available in Freeze mode, Measure mode and Protocols. Activations of the annotations by clicking the Right Select button. The list is displayed. Click Select on the wanted annotation. The annotation is positioned at the place of the curser. Click on the annotation with the left Select button to reposition it. Validation of the new position by clicking Select with the left button.
46 annotations can be added in each application. 10 annotations can be placed on one image.
See also chapter 13 and 15.1.6.

Exit of the user protocols and annotations page and return to Settings by pressing the key Clear.

Obstetric Report mode GA: In OB application, possibility to use all available measures to calculate the GA when ticking the box. The calculation of GA replaces the display of percentiles.

Import Export Archive:
Export: Possibility to export patient files, reports, images, clips (sequences), and graphs to an external media.
The upper part of the screen contains three columns. The one to the left named "Directory" contains the list of images and clips (sequences) which are not attached to a patient file, as well as the list of patients. To see the full list of patients, click on the cross to open the list. A patient file can include one or several reports, as well as images and sequences. The reports can include images, sequences and graphs. Click on the successive crosses to see all elements.
The column named "File" displays the list of images, sequences and graphs. In this list, each image and sequence appears both in the raw data format (env) and in the computer format which was chosen for storing.
Select the wanted element in the first or the second column. Click on the grey button in the middle marked with >>. The selected elements are now listed in the third column "To export or delete". One or more elements can be selected simultaneously by using the alphanumeric keys Shift and Ctrl.
To export, insert a CD or a USB device. Click "Export to USB" or "Export to CD". The exported files are copied to the external media but not deleted. If no external media is available, an error message occurs in the bottom of the screen.
The control "Clear Selection" empties the column with selected elements and enables to make a new choice.
After exporting, the patient files, reports, images, sequences and graphs can be opened and reviewed on external computers or other Imagyne devices.
The control "Refresh" updates the connected external media.

Delete: Follow the above described procedure. Instead of inserting an external media and clicking Export, click "Delete". A confirmation message occurs for security reasons in order not to delete by mistake. Click OK to confirm and delete.

Import: Possibility to import patient files as well as images and sequences in raw data format (imagenv, clipenv).
The upper part of the screen contains three columns. The one to the left named "Drive" contains the list of connected external media and their file content. To see all elements, click on the successive crosses. The column named "File" lists the elements of each highlighted file. Select the wanted element in the first or the second column. Click on the grey button in the middle marked with >>. The selected elements are now listed in the third column "Selection to Import". Click "Import"
If the data is not suited for import (bad format), an error message occurs. Otherwise, the selected element is copied from the external media to the scanner's hard disk and can be reviewed.
The control "Clear Selection" empties the column with selected elements and enables to make a new choice.

The control "Refresh" updates the connected external media.

Archive/Store: Possibility to archive and store patient files, patient reports, images and clips. The selection can be made by Date by entering the start and end date, or by Patient by entering the start patient and the end patient. Select the external device: USB or DVD. Press Archive. In this case, the patient files are copied and archived and the reports together with linked images are archived and deleted from the Imagyne device's hard disk. The patient files stay on Imagyne's hard disk. If you tick the box "Delete patient after archive" before archiving, both reports with images and patient files are archived and then deleted from Imagyne' hard disk. When ticking the box "Archive Clip" before archiving, the reports together with both linked images and linked clips are archived on the external device and then deleted from Imagyne's hard disk,
If an import of patient files is made after archiving, two patient files for the same patient could then be present. The device will automatically ask if one file should replace the other, if a new patient file should be created for the imported file, or if the two patient files should be merged.
Store all patients: Possibility to make a back-up of all patients, reports, images and clips on Imagyne's hard disk.

Consult Reports: Possibility to consult archived examination reports (made on Imagyne) on external media. The column named "Drive" contains the list of external media. Click on the crosses to see all elements. Select the wanted report. The report is displayed on the screen. Images and graphs can be selected for printing. Click Print for printing the report with selected images and graphs.
The control "Refresh" updates the external media.

Exit of Import/Export/Archive/Consult reports and return to Setting by pressing the key Clear.

User Short Keys: Possibility to enter up 10 user short keys. Select the wanted short key, for instance Key 1, in the left part of the box. Then select in the right part the function you want to allocate to the short key. The available functions for short keys are listed for each of the following modes: B, CFM and PW. Click on Clear Short Key to delete the selection. Exit of User Short Keys by pressing Clear or Setting. To use the user short key when in imaging mode, click Ctrl and the allocated number, for instance 1. The function is carried on.

Exit of the Setting menu by pressing the key Setting or by pressing the key Clear.

6. B-Mode imaging (Key number 4)

When turning the system on, the B-mode is displayed as the system's defaulting imaging mode.
The B mode is the basis also for other available modes (M, CFM, PW, CW).
When using one of the combined modes, you can return to the B-Mode by pressing the B knob.
The contextual B-menu with 3 sub-levels is displayed when using the B-Mode.
The following B parameters are always displayed on the screen in the upper right part: Gain, Frequency, Power, Dynamic.
The other parameters are displayed when they are changed. In order not to encumber the screen, these other parameters swap place on a "First in, First Out" basis. During the change of each parameter, the changed value is displayed in yellow.

6.1 Depth (Key number 16)

Increase and decrease of the examination depth by the Depth rocker switch. Upwards activation increases the depth, downwards activation decreases the depth.
The updated image depth is displayed at the bottom of the screen to the right. The vertical depth scale is graduated by increments of 1 cm. The maximum depth depends on the used probe.
When the Auto Focus function is ticked on the Setting page, the frequency and focuses are automatically adapted to the changed depth. However, manual adjustments are still possible.

6.2 Frequency (Key number 17)

The B frequency is adjusted with the rocker switch Frequency.
Upwards activation of the Frequency rocker switch increases the frequency.
Downwards activation of the Frequency rocker switch decreases the frequency.
The updated frequency is displayed at the right of the screen.
Each probe has 5 preset frequency steps within the bandwidth in B-Mode.

6.3 Gain (Key number 4)

The B Gain applied to the overall image is adjusted by turning the B knob.
Turn the B knob clockwise to increase the Gain.
Turn the B knob anticlockwise to decrease the Gain.
The updated gain level is displayed on the right of the screen.
Min. gain: 0. Max gain: 255

6.4 TGC (Time gain control) (Keys number 24)

The gain can be adjusted in selected depth zones by the 6 TGC rocker switches. Each zone is displayed by a blue dot on the TGC curve on the left of the screen. The zones are available depending on the depth.
Switch to the right to increase the TGC.
Switch to the left to decrease the TGC.
You can also adjust the TGC by placing the curser at the wanted place at the TGC curve. Press Select to validate the new TGC.
Click on the Reset TGC key in the contextual B menu to return to the predefined TGC curve.

6.5 Focus (Key number 7)

The Imagyne device is handling from 1 to 4 emission focuses.
Increase and decrease of the number of focuses by clicking the Focus knob. Every click increases the number of active focuses until 4; by the following click only one focus is active.
Place the focus(es) on the depth scale of the image by turning the Focus knob. Turn the Focus knob anticlockwise to place the focus(es) lower at the image. Turn the focus knob clockwise to place the focus(es) higher at the image. The distribution of focuses along the depth of the image is predefined.
The updated focuses are shown on the right of the screen, where one or more triangular markers indicate the positioning of the focus(es) on the depth scale.
NB: The device automatically deletes the focuses when these are exceeding the depth.

6.5.1 Focus Gap (contextual menu)

Possibility to enlarge the space between each focus point by pressing the key Focus Gap in the contextual B menu (second level). When the Gap function is active, the button is highlighted in red. This function enables to widen the focalized part of the image. To return to the focus points without extra gap, press the button Focus Gap once again.

6.6 Zoom (Key number 8)

Choice of zoom mode in the Setting menu (see paragraph 3.4): Full screen or Picture in Picture.
Activation and deactivation of the chosen mode by clicking the Zoom knob.

6.6.1 Full screen mode

The activation makes a pointer appear on the image. If the pointer is not at the wanted place, it can be repositioned by moving it with the trackball. The new position is validated by pressing Select or by turning the zoom knob.
In full screen zoom mode, the image is circled in yellow.
Increase of the zoom scale (positive zoom) by turning the Zoom knob clockwise; up to 35 positive zoom levels depending on probe and depth.
Decrease of the zoom scale (negative zoom) by turning the Zoom knob anticlockwise; up to 35 negative zoom levels depending on probe and depth.
The updated zoom scale is displayed at the right of the screen.
The following modes can be activated on the full-screen zoomed image: M, CFM, PW, CFM/PW, CW.
In 4D mode, the volume can be zoomed and de-zoomed in live and freeze mode (see chapter 12.2.8).

6.6.2 Picture in Picture mode

The activation makes a blue square appear on the image and the zoomed part is showed on the right of the screen. If the zoomed zone is not at the wanted place, it can be repositioned by moving it with the trackball, and the new position is validated by pressing Select.
Increase and decrease of the zoom scale by turning the Zoom knob, up to 3 zoom levels. The updated zoom scale is displayed at the right of the screen.
In 4D mode, the full screen zoom is always available, no matter which zoom mode is selected (see chapter 12.2.8).

NB: In both zoom modes, the following functions are still available: Focus, Gain, TGC, Depth (only in PIP mode), Frequency, Freeze.
If you want to use M, CFM, PW or CW imaging modes on a zoomed image, the zooming should be made in B, before activating the other modes.

The zoom function is available on live images, on Cineloop (frozen images and sequences, see chapter 13) and on stored loaded images and sequences (see chapter 14).

Deactivation of the Zoom mode by pressing the Zoom knob.

6.7 Dynamic (Contextual menu)

Increase and decrease of the dynamic scale by the keys Dynamic + and Dynamic- in the contextual B menu.
The updated Dynamic scale is displayed on the right of the screen.
Min. dynamic: 20 dB, Max dynamic: 90 dB, 2 dB step.

6.8 Noise Reject (Contextual menu)

Activation of the function Noise Reject by pressing the key Noise Reject in the contextual B menu. The key is highlighted in red when this function is active. The Noise Reject box appears on the image and can be positioned on the wanted place by dragging the trackball. To validate the position and unleash the cursor, click Select. To reactivate the positioning of the Noise Reject box, click Select inside the box.
To adjust the size of the Noise Reject box, click on one of the sides of the box with the Left Select button and move the trackball. Click Right Select to move from one side to another for adjusting the size. Click Left Select to validate the size.
The adjustment of the Noise Reject is made by turning the Zoom button (Key number 8). Turn it clockwise to increase the noise reject, and turn it anti-clockwise to reduce the noise reject.

Click on the key Noise Reject to deactivate this function and remove the Noise reject box.

6.9 Ima-Cross (Contextual menu)

Activation of the imaging mode Ima-Cross by the key Ima-Cross in the contextual B mode. When the function is active, the key is highlighted in red. The device is firing with several crossed beams. The angle of the beams is displayed on the screen and can be adjusted by the alphanumeric keys ↑ and ↓. The default angle is 10°.
Press the key Ima-Cross to deactivate the function and return to standard B imaging.
NB: This function is only available on the linear probe.

6.10 Ima-View: Automatic image optimisation (Contextual menu)

Automatic optimisation of the B picture by the key Ima-View in the contextual B menu. To return to the previous image adjustment, press the key Clear Ima-View in the contextual B menu.

6.11 Biopsy (Contextual menu)

Display of the 2 guide lines between which the biopsy needle passes.

 Warning:
This biopsy needle guide is only valid if the operator uses the biopsy guide recommended by ECM and listed for each probe (See chapter 2.8).

 Warning:
The user must check the right fastening of the biopsy guide on the probe to ensure secure guidance of the needle.

 Warning:
On probes C360V and C360A, check that the biopsy needle is situated at the same side as the orientation marker of the probe.

 Warning:
On probe E610A, check and confirm by clicking OK that the system will display a biopsy guideline dedicated to medical application.

6.12 Dual (Contextual menu)

Activation and deactivation of the B Dual mode (one live image and one frozen image on the screen at the same time) by the key Dual in the contextual B menu.
Changing from a live image on the left to a live image on the right by the key Dual Select in the contextual B menu.
The two displayed images in dual mode are using the same adjustments (frequency, depth etc.). Certain changes in these adjustments delete the frozen image. The live image is updated. Return to the dual display by the key Dual Select, and the frozen image is updated.
To defreeze in Dual mode (after having frozen the active image by pressing Freeze), use the keys Unfreeze Left or Unfreeze Right in the contextual Dual Freeze menu.
Exit of Dual mode and return to the standard B image by pressing the B knob.

6.13 Emission power (Contextual menu)

Increase and decrease of the B emission power by the keys Power+ and Power- in the contextual B menu.
The updated emission power scale is displayed on the right of the screen.
Min. power: -10 dB, Max power: 0 dB, 1 dB step.

6.14 Ima Clean (Contextual menu)

Activation of the function Ima Clean (Speckle Reduction) by the key Ima Clean in the contextual B menu in the contextual B menu. When the Ima Clean is active, the key is highlighted in red.
Access to the Ima Clean sub-menu by the key Ima Clean Tools in the contextual B menu. Exit of the sub-menu by pressing the key Exit.

6.14.1 Edge (Ima Clean contextual submenu)

Adjustment of the enhancement of edges and boundaries by the keys Edge+ and Edge-.

6.14.2 Speckle Reduction (Ima Clean contextual submenu)

Adjustment of the reduction of the speckle by the keys Speckle Reduction+ and Speckle Reduction-.

6.14.3 Grain (Ima Clean contextual submenu)

Adjustment of the granularity of the image by the keys Grain+ and Grain-

6.14.4 Line (Ima Clean contextual submenu)

Adjustment of the enhancement of continuous line structures.

6.14.5 Reset (Ima Clean contextual submenu)

Return to the initial Ima Clean adjustments saved in the current preset.

6.15 Anatomic M (Contextual menu)

Activation of the mode Anatomic M by pressing the key Anatomic M in the contextual B menu. A curser is displayed on the B picture. Drag it with the trackball to the selected position, press Left Select to validate the position of the first curser. Drag the trackball to the selected position of the second curser, displayed with an arrow. Click Right Select to switch from one curser to another for adjusting. Click Left Select to validate the positions. After validating, the anatomic M is displayed in the lower part of the B image.

6.16 Ima Level (Contextual menu)

Noise rejection on the whole B image by the keys Ima Level. When the function is active, the key is highlighted in red.
Adjustment of the Ima Level (5 steps) with the arrow keys on the alphanumeric keyboard.

6.17 Gamma (Contextual menu)

Adjustment of the gamma curve by the keys Gamma+ and Gamma- in the contextual B menu.
The updated Gamma scale is displayed on the right of the screen.

6.18 Extra B tools (Contextual menu)

Access to the sub-menu of extra B tools by the key Extra B tools in the contextual B menu.
Exit of the sub-menu by pressing the key Exit.

6.18.1 B Average (Extra B tools contextual sub-menu)

Adjustment of the time average between the B images by the keys B Average+ and B Average- in the Extra B tools contextual sub-menu. The updated B Average level is displayed on the right of the screen.
Min. average: 50, Max average: 200, 4 steps.

6.18.2 Color (Extra B tools contextual sub-menu)

Pseudo-coloration of the B image by pressing the keys Color+ and Color- in the Extra B tools contextual sub-menu. 5 color steps are available.

6.18.3 TEQ Tissue Equalisation (Extra B tools contextual sub-menu)

Activation of the function Tissue Equalisation by the key TEQ in the Extra B tools contextual sub-menu. When the function is active, the key is highlighted in red. The Equalizer box appears on the image and can be positioned on the wanted place by

dragging the trackball. To validate the position and unleash the cursor, click Select. To reactivate the positioning of the Equalizer box, click Select inside the box.
Click on the key TEQ to deactivate this function and remove the Equalizer box.

6.18.4 High Resolution (Extra B tools contextual sub-menu)

Activation and deactivation of the high resolution function by the key High Res in the Extra B tools contextual sub-menu. High resolution takes advantage of the use of wide-band probes and improves the axial resolution of the image. When this function is activated, the key is circled in red.

6.19 Display/size (Contextual menu)

Access to the sub-menu of Display/Size tools by the key Display/Size in the contextual B menu.
Exit of the sub-menu by pressing the key Exit.

6.19.1 Orientation of image (Display/Size contextual sub-menu)

Turn the image up or down by the key U/D in the Display/Size contextual sub-menu.
Turn the image left or right by the key L/R in the Display/Size contextual sub-menu.
Rotation of the image by 90° by the key Rotation 0° in the Display/Size contextual sub-menu (90°, 180°, 270°).
Reset the orientation by the key Reset Rotation in the Display/Size contextual sub-menu.

6.19.2 FOV Field of View (Display/Size contextual sub-menu)

Activation and adjustment of the field of view of the image by the keys FOV+ and FOV- in the Display/Size contextual sub-menu. The frame rate is updated according to the adjustment of the Field of view.
This function is not available on the phased array probe.


Warning:
The reduction of the field of view (FOV) might lead to an important increase of the TI index of acoustic power displayed at the upper right of the screen. The use of a reduced field of view enables to increase the frame rate but this function should be used with precaution according to the warnings concerning the acoustic power described in the chapter 2.1 in this manual.

6.19.3 Trapezoïdal image (Display/Size contextual sub-menu)

Activation and adjustment of the trapezoidal image by the keys Trapezoidal+ and Trapezoidal- in the Display/Size contextual sub-menu. The updated trapezoidal angle is displayed on the right of the screen.
Maximum angle: 50.
The trapezoidal function is only available on the linear probe.

6.20 ECG (Contextual menu)

Access to the ECG sub-menu by the key Menu ECG in the contextual B menu.
Exit of the sub-menu by pressing the key Exit.

6.20.1 ECG (ECG sub-menu)

Connect the ECG cables before activating the ECG function. Activation of the ECG curve by pressing the key ECG. When this function is active, the key is highlighted in red. The ECG curve is displayed on the bottom of the image. The ECG function is active in the following modes: B, CFM, PW, and CW.
To deactivate the ECG, press the ECG key again.

6.20.2 ECG time (ECG sub-menu)

Adjustment of the ECG time scale with the keys ECG Time+ and ECG Time- in the contextual ECG sub-menu.

6.20.3 ECG Smoothing (ECG sub-menu)

Smoothening of the ECG curve with keys ECG Smooting+ and ECG Smoothing- in the contextual ECG sub-menu.
To deactivate the ECG, press the ECG key again.

6.21 Harmonic (Key number 29)

Press the key Harmonic (Key number 29) to activate the function Pulse Inversion Harmonic (PIH). This function consists in emitting the ultrasounds at one frequency (fundamental frequency) and receiving at the double frequency (harmonic frequency). The Pulse Inversion Harmonic is active on all probes. 5 frequency steps are available on each probe in Harmonic imaging. When the function is active, “Harmonic On” is displayed on the screen in the upper right corner. Deactivation of the Harmonic function by pressing the key Harmonic.

7. M-Mode imaging (Key number 30)

Selection of the M-mode by clicking the M key. The M-mode is added to the B image.
Display of the contextual M menu (2 levels).
Deactivation of the M mode by clicking the M key or the B knob.

7.1 Positioning of the M line

When turning the M-mode on, the M-line is positioned in the middle of the B image.
If the line is not at the wanted place, place the curser at the wanted place with the trackball and click Select to validate the new position.

7.2 Time scale (Contextual menu)

Increase and decrease of the time scale by the keys TimeScale+ and TimeScale- in the contextual M menu.
The time scale goes from 4 to 26 seconds.
The scale in seconds is updated.

7.3 Color (Extra BM Tools sub-menu)

Pseudo-coloration of the M representation and the B image by pressing the keys Color+ and Color- in the Extra BM tools contextual sub-menu. 5 color steps are available.

7.4 B-Mode controls

The following adjustments of the B-image stay active also in the M-Mode:
Depth: See chapter 6.1
Frequency: See chapter 6.2
Gain: See chapter 6.3
TGC: See chapter 6.4
Focus and Focus Gap: See chapter 6.5
Power: See chapter 6.13
Dynamic: See chapter 6.7
Ima Level: See chapter 6.16
Gamma: See chapter 6.17
Extra B tools: See chapter 6.18
Display/Size: See chapter 6.19

8. CFM-Mode imaging (Key number 5)

Activation of the CFM mode (Color Flow Mapping) by pressing the CFM knob. The CFM image is added to the B image (B/CFM).
Display of the contextual CFM menu .
Display of the CFM box.
The curser is trapped in the CFM box for adjustment of size and position.
The mode CFM velocity is activated by default.
The following CFM parameters are always displayed on the screen in the middle right part: Mode, Gain, Frequency, Power, PRF. The other parameters are displayed when they are changed. In order not to encumber the screen, these other parameters swap place on a “First in, First Out” basis. During the change of each parameter, the changed value is displayed in yellow. Deactivation of the CFM mode by pressing the CFM knob or the B knob.

8.1 CFM Modes

Two CFM modes are available: Velocity and Power. The mode CFM velocity is activated by default. The active CFM mode is displayed on the screen. To change from one CFM mode to another, click on the key CFM Mode in the contextual CFM menu.

8.1.1 Velocity (Contextual menu)

The mode CFM velocity is activated by default when turning on the CFM mode.
The color scale, which is also the PRF scale (see chapter 8.6) is graduated in two parts in order to distinguish the two directions of the flows: towards and away from the transducer. Slow flows are depicted in dark red or dark blue; high speeds are passing from blue to white, or from red to yellow (depending on the direction).
When in CFM Power, return to CFM Velocity by clicking on the key CFM Mode in the contextual CFM menu.

8.1.1.1 Invert (Contextual menu)

Inversion of the colors attributed to the two directions of flows (red and blue nuances) by the key CFM Invert in the contextual CFM menu
NB: This function is only active in CFM velocity.

8.1.2 CFM Power (Contextual menu)

When in CFM Velocity, the CFM Power mode is activated by the clicking on the key CFM Mode in the contextual CFM menu.
In CFM Power Mode, the color scale is graduated from red to yellow. Slow flows are depicted in dark red; high speed in yellow (independently of directions).

8.1.2.1 Power scale (Contextual menu)

Increase and decrease of the color scale nuances by the keys Power scale+ and Power scale- in the contextual CFM menu.
The value of the color scale is updated on the color scale itself.
Min. color power scale: 1; Max color power scale: 100
NB: This function is only active in CFM power.

8.2 Positioning and size of the CFM box

The CFM box can be moved with the trackball to the wanted place immediately after turning on the CFM mode. The contour of the CFM box is a white line when the repositioning is activated.
To adjust the size, click Select with the right button. The contour of the CFM box is a white dotted line when the adjustment of the size of the box is activated. Move the trackball horizontally (left – right) to adjust the width. Move the trackball vertically (up – down) to adjust the height.
Click Select with the right button to change between adjustment of size and position.
Click Select with the left button to validate the new position and /or size and to unleash the cursor. The contour of the CFM box is a yellow line when position and size are validated.
To re-activate the adjustment of position or size of the box, place the cursor in the box and click Select (left or right button). Follow the description above.

Repositioning of the box is also possible by clicking the key Position in the contextual CFM menu. Click Select with the left button or click the key Position once again to validate the new position and unleash the cursor.
Adjustment of the size of the box is also possible by clicking the key Size in the contextual CFM menu. After adjustment of the size, click Select with the left button or click the key Size once again to validate the new size and unleash the cursor.

8.3 Frequency (Key number 17)

The CFM frequency is adjusted with the rocker switch Frequency.
Upwards activation of the Frequency rocker switch increases the frequency.
Downwards activation of the Frequency rocker switch decreases the frequency.
The updated frequency is displayed at the right of the screen.
Each probe has 5 preset frequency steps within the bandwidth in CFM-Mode.

8.4 Gain (Key number 5)

The CFM Gain is adjusted by turning the CFM knob.
Turn the CFM knob clockwise to increase the Gain.
Turn the CFM knob anticlockwise to decrease the Gain.
The updated gain level is displayed on the right of the screen.
Min. gain: 1. Max gain: 100.

8.5 PRF (Key number 9)

Adjustment of the PRF (Pulse Repetition Frequency) scale in CFM by the CFM PRF rocker switch, situated next to the CFM knob.
Upwards activation increases the PRF, downwards activation decreases the PRF.
The updated PRF value in KHz is displayed at the right of the screen.
When in CFM Velocity (see chapter 8.1), the PRF color scale in cm/s is updated on the left of the screen.

8.6 Steering (Key number 11)

The CFM box can be steered by the rocker switch Steering.
Upwards activation steers to the left; downwards activation steers to the right.
NB: Steering is only possible when using the linear probe.

8.7 Reject (Key number 10)

Adjustment of the rejection of low velocities by the Reject rocker switch.
The reject indicator is displayed on the right of the screen as Min Vel.
Min. reject: 1; Max. Reject: 10

8.8 Echo Filter (Contextual menu)

Activation and adjustment of the Echo Filter with the keys Echo Filter+ and Echo Filter- in the contextual CFM menu. The Echo Filter is filtering the strong amplitude echos. The Echo Filter level is displayed on the right of the screen.
Min.Filter: 0; Max.Filter 250.

8.9 Wall Filter (Contextual menu)

Activation and adjustment of the Wall Filter with the keys Wall Filter+ and Wall Filter- in the contextual CFM menu. The Wall Filter level is displayed on the right of the screen.
Min.Wall Filter: 0; Max.Filter 7.

8.10 Emission Power (Contextual menu)

Increase and decrease of the CFM emission power by the keys Power+ and Power- in the contextual CFM menu.
The updated emission power scale is displayed on the right of the screen.

8.11 CFM Average (Contextual menu)

Activation and adjustment of the time average between the CFM images by the keys CFM Average+ and CFM Average- in the contextual CFM menu.

The updated Average level is displayed on the right of the screen.
The CFM average scale goes from 0 to 200 with a last level named A.

8.12 CFM Firings (Contextual menu)

Adjustment of the number of CFM firings by the keys CFM Firings+ and CFM Firings- in the contextual CFM menu. When the number of firings is increased the sensibility of the CFM is also increased but the frame rate is decreased.

8.13 B-Mode controls

The following adjustments of the B-image stay active in the B/CFM-Mode: Gain, TGC, Depth. Please refer to the chapter 6 for further details of the B-Mode controls.

9. PW-Mode imaging (Key number 6)

Activation of the PW (Pulsed Wave) mode by pressing the PW knob. The PW image is added to the B image (B/PW).
Display of the contextual PW menu (2 levels).
Display of the PW fire line and gate on the B image, and of the graphic illustration of the PW spectrum on a timescale.
The curser is trapped on the gate for adjustment of size and position.
The following PW parameters are always displayed on the screen in the lower right part: Gain, Frequency, Power, PRF. The other parameters are displayed when they are changed, In order not to encumber the screen, these other parameters swap place on a “First in, First Out” basis. During the change of each parameter, the changed value is displayed in yellow.
Deactivation of the PW mode by pressing the PW knob or the B knob.

9.1 Positioning and size of the PW gate

The PW gate line can be moved with the trackball to the wanted place immediately after turning on the PW mode. The gate line is white when the repositioning is activated.
To adjust the gate size, click Select with the right button. The PW gate line is a white dotted line when the adjustment of the gate size is activated. Move the trackball to adjust the size. The gate size in mm is displayed on the right of the screen.
Click Select with the right button to change between adjustment of size and position. Click Select with the left button to validate the new position and/or size of the gate line and to unleash the cursor. The PW gate line is yellow when position and size are validated.
To reactivate the adjustment of position or size of the gate, place the cursor on the line and click Select (left or right button). Follow the description above.
It is also possible to adjust the size of the gate by clicking the keys Gate Size+ and Gate Size- in the contextual PW menu.
The size of the gate in mm is displayed on the right of the screen.

9.2 Frequency (Key number 17)

The PW frequency is adjusted with the rocker switch Frequency.
Upwards activation of the Frequency rocker switch increases the frequency.
Downwards activation of the Frequency rocker switch decreases the frequency.
The updated frequency is displayed at the right of the screen.
Each probe has 5 preset frequency steps within the bandwidth in PW-Mode

9.3 Gain (Key number 6)

The PW Gain is adjusted by turning the PW knob.
Turn the PW knob clockwise to increase the Gain.
Turn the PW knob anticlockwise to decrease the Gain.
The updated gain level is displayed on the right of the screen.
Min. gain: 0. Max gain: 100

9.4 Emission Power (Contextual menu)

Increase and decrease of the PW emission power by the keys Power+ and Power- in the contextual PW menu.
The updated emission power scale is displayed on the right of the screen.

9.5 PRF (Key number 13)

Adjustment of the PRF (Pulse Repetition Frequency) scale in PW by the PW PRF rocker switch, situated next to the PW knob.
Upwards activation increases the PRF, downwards activation decreases the PRF.
The updated PRF value in KHz is displayed at the right of the screen, and the PRF scale on the spectral illustration is updated.

9.6 Steering (Key number 11)

The PW gate line can be steered by the rocker switch Steering.
Upwards activation steers to the left; downwards activation steers to the right.
Automatic steering is available together with automatic angle correction, see chapter 9.7.1.

NB: Steering is only possible when using the linear probe.

9.7 Angle (Key number 12)

Activation and adjustment of the angle correction in the PW gate by the Angle rocker switch. The system converts the Doppler frequency shift in velocity. Always place the Angle in the same direction as the flow.
Upwards activation tips the angle to the right; downwards activation tips the angle to the left.
The speed scale in cm/s or in m/s is updated to the right of the PW spectrum. The angle value is displayed at the right of the screen.
When the angle correction is activated, the key Angle in the contextual PW menu is highlighted in red.
The angle is displayed as a line in the PW gate. If the automatic angle correction (see chapter 9.7.1) is active, the angle will be displayed as a line and two small spots on each side of the line.
Deactivation of the angle correction by pressing the key Angle in the contextual PW menu.

9.7.1 Automatic Angle correction

The angle correction can also be activated by the key Angle in the contextual PW menu. When the angle correction is activated, the key Angle in the contextual PW menu is highlighted in red.
If the circle “None” in the Setting page (see chapter 5.4) is ticked, the angle correction in the contextual menu is manual and identical to the Angle Rocker Switch.
If the circle “Angle” in the Setting page (see chapter 5.4) is ticked, the angle correction in the contextual menu is automatic but independent of the steering of the PW line. The device will optimize the angle correction according to the flow.
If the circle “Angle and Steering” in the Setting page (see chapter 5.4) is ticked, the angle correction in the contextual menu and the steering of the PW are automatic. The device will optimize both, according to the flow.
If the automatic angle correction is active, the angle will be displayed as a line and two small spots on each side of the line in the PW gate. Otherwise the angle is displayed just as a line.
If the box PW angle on start is ticked, the automatic angle correction will be active when turning on the PW mode.
Deactivation of the angle correction by pressing the key Angle in the contextual PW menu.

9.8 Baseline (Key number 14)

Raising and lowering of the base line of the PW PRF scale by the Baseline rocker switch.
Upwards activation raises the line, downwards activation lowers the line.
The PRF scale is updated to the right of the PW frame.

9.9 Invert (Contextual menu)

Inversion of the PRF scale in PW by the key Invert in the contextual PW menu. The peaks underneath the baseline will be above and conversely.
When the Invert function is activated, the key is highlighted in red, and “Invert” is displayed on the top of the PW spectrum.

9.10 Audio (Key number 15)

Adjustment of the acoustic volume of the PW by the Audio rocker switch.

9.11 Ima-Pulse: Automatic optimization of PW spectrum (Contextual menu)

Automatic optimization of the PW spectrum by the key Ima-Pulse in the contextual PW menu. The Imagyne device automatically optimizes the whole PW spectrum. When the automatic optimization is activated, the key Ima-Pulse is highlighted on red. To deactivate the function, press the key Ima-Pulse again.

9.12 High PRF (Contextual menu)

Activation and deactivation of the High PRF function by the key High PRF in the contextual PW menu. The high PRF enables to measure high velocities.
The Simplex mode is activated by default with only the PW in live.
The PRF scale is updated.
When the High PRF function is activated, the key is highlighted in red.

9.13 Simplex/Duplex (Contextual menu)

Activation of the Simplex mode where only the PW is live by the key Simplex in the contextual PW menu. The B image is frozen, and the PW Doppler quality is improved.
The key Duplex appears in the contextual PW menu and enables to deactivate the Simplex mode and return to Duplex mode where both the B and the PW imaging modes are active.

9.14 Noise Reject (Contextual menu)

Increase and decrease of the noise filter by the keys Noise Reject+ and Noise reject- in the contextual PW menu.
The noise reject indicator is displayed at the right of the screen.
Min. noise reject: 1; Max. noise reject: 10.

9.15 Wall Filter (Contextual menu)

Increase and decrease of the Wall filter (filtering of low frequencies) by the keys Wall Filter+ and Wall Filter- in the contextual PW menu. The velocities nearest to the baseline are filtered.
The filter indicator is updated on the right of the PW frame.
Min. filter: 1; Max. filter: 4.

9.16 Time scale (Contextual menu)

Increase and decrease of the PW spectrum's time scale by the keys Time Scale+ and Time Scale- in the contextual PW menu. The scale in seconds is updated.
The time scale goes from 1 to 10 seconds.

9.17 Color (Contextual menu)

Coloration of the PW spectrum by the keys Color+ and Color- in the contextual PW menu. The coloration is active on the factory presets.

9.18 B-Mode controls

The following adjustments of the B-image stay active in the B/PW-Mode: Gain, TGC, Depth. Please refer to the chapter 6 for further details of the B-Mode controls.

10. B/CFM/PW-Mode

The system makes triplex imaging, adding an active CFM image and an active PW image to the B image.
Activation of the CFM image by pressing the CFM knob (Key number 5). Please see chapter 8 for details of the CFM controls.
Activation of the PW image by pressing the PW knob (Key number 6). Please see chapter 9 for details of the PW controls.
Display of the contextual B/CFM/PW menu .
When all 3 modes are active, the cursor is trapped in the PW gate for adjustment of position and size. To unleash the cursor, click Select with the left button.

10.1 PW-mode controls

All PW controls are available. Please see chapter 9 for details.

10.1.1 Invert (Contextual menu)

Inversion of the PRF scale in PW and inversion of the CFM Velocity colors attributed to the two directions of the flow by the key Invert in the contextual PW menu. The peaks underneath the baseline will be above and conversely.
When the Invert function is activated, the key is highlighted in red, and “Invert” is displayed on the top of the PW spectrum.

10.1.2 Steering (Key number 11)

The PW gate line and the CFM box can be steered by the rocker switch Steering.
Upwards activation steers to the left, downwards activation steers to the right.
NB: Steering is only possible when using the linear probe.

10.2 CFM-mode controls

The following adjustments of the CFM image stay active in the B/CFM/PW mode: Gain, Reject. Please refer to chapter 8 for details.

10.3 B-mode controls

The following adjustments of the B-image stay active in the B/CFM/PW-Mode: Gain, TGC. Please refer to the chapter 6 for further details of the B-Mode controls.

10.4 Simplex/Triplex (Contextual menu)

Activation of the Simplex mode where only the PW is live by the key Simplex in the contextual B/CFM/PW menu. The B/CFM image is frozen, and the PW Doppler quality is improved.
The key Triplex appears in the contextual B/CFM/PW menu and enables to deactivate the Simplex mode and return to Triplex mode.

11. CW mode imaging

Activation of the pre-CW (Continuous Wave) mode in two ways:

- Directly by pressing the PW knob if the box “PW starts CW” is ticked in the Setting page (see chapter 5.4).
- Or by pressing the key CW in the contextual B menu

Display of the CW line on the B image. The CW image is added to the B image.
The curser is trapped on the line for adjustment of position.
After adjusting the position, press the Left Select button for activating the CW mode. Display of the graphic illustration of the CW spectrum on a timescale. The B image is frozen (simplex mode).
Display of the contextual CW menu.
The following CW parameters are always displayed on the screen in the lower right part: Gain, Frequency, Power, PRF. The other parameters are displayed when they are changed, in order not to encumber the screen, these other parameters swap place on a “First in, First Out” basis. During the change of each parameter, the changed value is displayed in yellow.
Deactivation of the CW mode by pressing the B knob.
NB: CW is only available on the phased array probe using the cardiology application.

11.1 Positioning of the CW line

The CW line can be moved with the trackball to the wanted place immediately after turning on the CW mode. The line is white when the repositioning is activated.
Click Select with the left button to switch between pre-CW (with the B image active) and CW.
Click Select with the right button to validate the new position and to unleash the cursor. The CW line is yellow when the position is validated.
To reactivate the adjustment of position of the line, place the cursor on the line and click Select with the right button. Follow the description above.

11.2 Gain (Key number 6)

The CW Gain is adjusted by turning the PW knob.
Turn the PW knob clockwise to increase the Gain.
Turn the PW knob anticlockwise to decrease the Gain.
The updated CW gain level is displayed on the right of the screen.
Min. gain: 0. Max gain: 100.

11.3 PRF (Key number 13)

Adjustment of the PRF (Pulse Repetition Frequency) scale in CW by the PW PRF rocker switch, situated next to the PW knob.
Upwards activation increases the PRF, downwards activation decreases the PRF.
The updated PRF value in Hz is displayed at the right of the screen, and the PRF scale on the spectral illustration is updated.

11.4 Baseline (Key number 14)

Raising and lowering of the base line of the CW PRF scale by the Baseline rocker switch.
Upwards activation raises the line, downwards activation lowers the line.
The PRF scale is updated to the right of the CW frame.

11.5 Audio (Key number 15)

Adjustment of the acoustic volume of the CW by the Audio rocker switch.

11.6 Noise Reject (Contextual menu)

Increase and decrease of the noise filter by the keys Noise Reject+ and Noise reject- in the contextual CW menu.
The noise reject indicator is displayed at the right of the screen.
Min. noise reject: 1; Max. noise reject: 10.

11.7 Wall Filter (Contextual menu)

Increase and decrease of the Wall filter (filtering of low frequencies) by the keys Wall Filter+ and Wall Filter- in the contextual CW menu. The velocities nearest to the baseline are filtered.
The filter indicator is updated on the right of the CW frame.
Min. filter: 1; Max. filter: 4.

11.8 Time scale (Contextual menu)

Increase and decrease of the CW spectrum's time scale by the keys Time Scale+ and Time Scale- in the contextual CW menu. The scale in seconds is updated.
The time scale goes from 1 to 10 seconds.

11.9 Invert (Contextual menu)

Inversion of the PRF scale in CW by the key Invert in the contextual CW menu. The peaks underneath the baseline will be above and conversely.
When the Invert function is activated, the key is highlighted in red.

11.10 Color (Contextual menu)

Coloration of the CW spectrum by the keys Color+ and Color- in the contextual CW menu. The coloration is active on the factory presets.

12. 4D Imaging (Key number 28)

Connect the volumetric 4D probe on the probe connector 1 (the first connector to the right).
The 4D probe is active for 2D imaging, functioning like a standard convex probe.

12.1 Pre-4D

Press the key 4D (key number 28) to activate the 4D imaging mode. The 4D box appears on the screen in the middle of the B image.
Display of the pre-4D contextual menu .
To adjust the position of the box, click inside the box and drag it with the trackball. Click Select once again to validate the new position.
The height of the 4D box (Clipping) can be adjusted by clicking on the upper or the lower line. The line gets blue and can be dragged with the trackball. Click Select right to switch between the upper and the lower line. Click Select left to validate the new size.
Click on the B Knob to exit the 4D pre-menu and return to B imaging.

12.1.1 Sweeping (contextual menu)

Adjustment of the angle of the probe's movements. Increase of the angle by pressing Sweeping +, decrease of the angle by pressing Sweeping -. 3 angle steps.

12.1.2 4D Field of View (contextual menu)

Adjustment of the acquisition volume. Increase of the size by pressing 4D FOV+, decrease of the size by pressing 4D FOV-.

12.1.3 Dynamic (contextual menu)

See chapter 6.7 in the user manual on adjustment of the dynamic scale.

12.1.4 Gamma (contextual menu)

See chapter 6.17 in the user manual on adjustment of the gamma curve.

12.1.5 Acquisition Speed (contextual menu)

Selection of the acquisition speed: Fast or Slow. The active speed is highlighted in red.

12.2 4D

After adjustment of the above listed parameters, press the key 4D (key number 28) once again. The probe starts to move. The 4D volume image is displayed in the middle of the screen.
In the upper left of the screen, a randomly refreshed B image is displayed with indication of the position of the 4D box. The height of the 4D box (clipping) can be adjusted by clicking on the upper or the lower line of the box. The line gets blue and can be dragged with the trackball. Click Select right to switch between the upper and the lower line. Click Select left to validate the new size.
Display of the 4D live contextual menu (3 levels).

12.2.1 Gain (Key number 4)

Adjustment of the B and 4D gain by turning the B knob.
The updated gain level is displayed on the right of the screen.

12.2.2 Acquisition Speed (contextual menu)

See chapter 12.1.5.

12.2.3 Resolution (contextual menu)

Adjustment of the 4D resolution by the keys Resolution+ and Resolution- (contextual 4D menu). The resolution influences the frame rate. The selected Resolution is displayed at the screen: Low, Medium or High.

12.2.4 Sweeping (contextual menu)
See chapter 12.1.1.

12.2.5 4D Field of View (contextual menu)
See chapter 12.1.2

12.2.6 Opacity (Key number 5)
Adjustment of the opacity by turning the CFM knob (key number 5).
The updated opacity level is displayed on the right of the screen.
Min. opacity: 0. Max opacity: 30.

12.2.7 Luminosity (Key number 6)
Adjustment of the luminosity by turning the PW knob (key number 6).
The updated luminosity level is displayed on the right of the screen.
Min. luminosity: 0. Max luminosity: 23.

12.2.8 Zoom (Key number 8)
Zooming on the volume image by turning the Zoom knob (key number 8).
In 4D mode, the full screen zoom is always available, no matter which zoom mode is selected (see chapter 6.6).

12.2.9 Rotate (Key number 8)
Activation of the rotating function by pressing the Zoom knob (key number 8). A white circle around the volume image indicates that the rotating is active. Turn the Zoom knob to rotate the volume.

12.2.10 Reject (Contextual menu)
Adjustment of the Reject level by the keys Reject+ and Reject- in the contextual 4D menu.
The updated rejct level is displayed on the right of the screen.
Min. reject: 1. Max reject: 4.

12.2.11 Contrast (Contextual menu)
Adjustment of the contrast level by the keys Contrat+ and Contrast- in the contextual 4D menu.
The updated contrast level is displayed on the right of the screen.
Min. contrast: 0. Max. contrast: 4.

12.2.12 Color (contextual menu)
Adjustment of the color level of the 4D image by pressing Color + and Color -. 3 steps.

12.2.13 Dynamic (contextual menu)
See chapter 12.1.3

12.2.14 Gamma (contextual menu)
See chapter 12.1.4

12.2.15 Smoothening (contextual menu)
Smoothening of the 4D volume by the keys Smoothening + and Smooothening -. 5 levels of smoothening.

12.3 4D Freeze
Press the key Freeze (Key number 3) to freeze the 4D imaging.
Display of the 4D Volume by default.
Display of the 4D freeze contextual menu.
Display of the Cine-loop window with the number of images and the length of the frozen sequence. The curser is trapped by the play indicator by default. To unleash the curser from the Cine-loop window, click Select. See the chapter 13 for details on the cine-loop.
In the upper left of the screen, a B image is displayed with indication of the position of the 4D box. The height of the 4D box (clipping) can be adjusted by clicking on the upper or the lower line of the box. The line gets blue and can be dragged with

the trackball. Click Select right to switch between the upper and the lower line. Click Select left to validate the new size.
4D images and 4D sequences can be stored on the device's hard disk. Afterwards, they can be loaded, reviewed and post-processed. See chapter 14 and 16 for further details.

Defreeze and return to live imaging by pressing the key Freeze (Key number 3).

12.3.1 Rotate (Key number 8)
Activation of the rotating function by pressing the Zoom knob (key number 8). A white circle around the volume image indicates that the rotating is active. Turn the Zoom knob to rotate the volume.

12.3.2 Volume (contextual menu)
Display of the reconstituted 4D volume image.

12.3.3 Multicut (contextual menu)
Display of the 4D image break-down: 3 cuts and the reconstituted 4D volume image are displayed simultaneously. The 3 cuts are the following:

- A 2D image cut in the same line as the probe, illustrated by the red face of the mini-cube and the red lines on the images.
- An image vertically perpendicular to the probe, illustrated by the yellow face of the mini-cube and the yellow line on the images.
- A horizontal image, horizontally perpendicular to the probe, illustrated by the blue face of the mini-cube and the blue line on the images.

The 3 images enable to analyze the different cuts. The lines on the images can be dragged with the trackball from one side to another in order to see the whole capture of all three sides. These adjustments also affect the Cube display.

12.3.4 Cube (contextual menu)
Display of the 4D image break-down as a three-dimensional cube. The colors on the cube are the same as in the Multicut display:

- Red illustrates the 2D image cut in the line of the probe.
- Yellow illustrates the image cut vertically perpendicular to the probe.
- Blue illustrates the image cut horizontally perpendicular to the probe.

The axes of the cube can be moved with the trackball in order to see the whole capture of all three sides. These adjustments also affect the Multicut display.

12.3.5 Slanting cut (contextual menu)
Possibility to extract a selected cut in any spatial orientation by clicking Select and dragging each of the four handles (yellow, red, blue and green). To validate the position of a handle, click Select.
The colors of the handles are the same as in the Multicut and Cube displays:

- Red illustrates the 2D image cut in the line of the probe.
- Yellow illustrates the image cut vertically perpendicular to the probe.
- Blue illustrates the image cut horizontally perpendicular to the probe.

The green handle enables to turn the image in any direction and seek the wanted cut.

12.3.6 Explorer 3D (Contextual menu)
Possibility to turn around the acquired volume. Press Select in the cube on the right. A pink circle is displayed and indicates that the turning is activated. Turn around the volume by moving the trackball. Click Select to unleash the curser.
Exploration in depth by turning the Focus know (key number 7). Clockwise turning moves up, anti-clockwise turning moves down.

12.3.7 Print (contextual menu)
Printing of the 4D display on the screen by pressing the key Print: Multicut (by default), Cube, or Volume.

12.3.8 Smoothening (contextual menu)
See chapter 12.2.15.

12.3.9 Opacity (Key number 5)
See chapter 12.2.6.

12.3.10 Luminosity (Key number 6)
See chapter 12.2.7.

12.3.11 Reject (Contextual menu)
See chapter 12.2.10.

12.3.12 Contrast (Contextual menu)
See chapter 12.2.11.

12.3.13 Color (contextual menu)
See chapter 12.2.12

12.3.14 Dynamic (contextual menu)
See chapter 12.1.3

12.3.15 Gamma (contextual menu)
See chapter 12.1.4

Defreeze and return to live imaging by pressing the key Freeze (Key number 3).

Exit of 4D imaging and return to 2D imaging by pressing the B knob (Key number 4).

13. Freeze mode - Cineloop

Freeze and defreeze of the image by the Freeze key (Key number 3).
The last sequence of images is stored in the cineloop. The freeze mode is available in all modes (B, M, CFM, PW, Triplex).
“Imagyne” written on the right of the image indicates that the image is frozen.

When the image is frozen, the Cineloop window appears in the right bottom corner of the screen. The number of images and the length in seconds of the frozen sequence are indicated in the window. The length of the sequence depends on the imaging mode and the frame rate.
A yellow triangle in the Cineloop window indicates the start of the sequence, and a green triangle indicates the end of the sequence. These triangles can be moved with the trackball in order to reduce the length of the sequence for storing. See chapter 14.2 on this issue.

By default, the curser is trapped by the play indicator in the Cineloop window. It can be moved by the trackball, to the left to go backwards in the sequence, and to the right to forward it.
The curser is unleashed from the Cineloop window by clicking Select.
To put the curser back in the Cineloop window, click on the play indicator in the window.
The cineloop can be activated and paused with the key Cineloop (Key number 23). The sequence is played forwards. The cineloop sequence can be played backwards, image by image by the key <, and forwards, image by image by the key >.
The controls Store image (Key number 22) and Store clip (Key number 21) are active in freeze mode and enable to store the wanted content on the hard disk of the device. See chapter 14 for details about storing.

In Freeze mode, all post-processing functions are active. See chapter 16 about Post processing for details.

When the image is frozen, the contextual Freeze menu is displayed. This menu is depending on the used imaging mode..

Print: Printing of the currently displayed image by pressing the key Print in the contextual Freeze menu. If several printers are available and if the box “Select Printer at Print Image” is ticked (see chapter 5.4), the device proposes a selection of printers. Otherwise, printing is made on the default printer.

It is possible to do measures on frozen images and sequences. See chapter 15 for details.

Annotations can be added in Freeze mode. See chapter 5.4 on how to enter new annotations in each application.
Display of the list of available annotations by clicking the Right Select button. Pass the curser on the list and click Select (right or left button) on the wanted annotation to add it on the image. The annotation is positioned at the place of the curser. If needed, click on the annotation with the left Select button and drag it to a new position. Validation of the new position by clicking Select with the left button.
10 annotations can be placed on one image.

A frozen image or sequence can be zoomed. See chapter 6.6 for details.

Defreeze of the image and return to live mode by clicking freeze (Key number 3).

Dual: When in Dual (See chapter 6.12), it is possible to defreeze one of the two images displayed simultaneously on the screen, by using the keys Unfreeze Left or Unfreeze Right in the contextual Dual Freeze menu.

14. Store images and clips, Review

Images and sequences can be stored on the hard disk, and afterwards be loaded, reviewed and post-processed. See the chapter 16 about Post-processing for details.

14.1 Store image (Key number 22)

An image, live or frozen, can be stored on the hard disk by clicking the key Store image (Key number 22). While storing, the following message is displayed on the screen: “Image recording”. Don’t press any key before this message disappears.

Store image is active in both live and Freeze modes (See chapter 13).

The choice of the image format (bmp, jpeg and/or Dicom) for storing is made in the Setting menu (See chapter 5.4). By default, the raw data format is always stored (env).

If an image is stored while a patient file is open, the image will be stored in this file. If an examination has been started, meaning that a report is open, the image is stored in the report (see chapter 20). If there is no open patient file, the image will be stored as a non attached file. When the image has been stored, a thumbnail with the temporary name of the image appears above the contextual menu (example I090624-1134(2): I for image, 09 for the year, 06 is the month, 24 the date, 11 the hour of storing, 34 the minute of storing and 2 for the number of images stored at the same time). The thumbnail stays on the screen during the current application. The image can be loaded by clicking on the thumbnail with the trackball and Select.

If several images and sequences of the same application are stored, these are all displayed by thumbnails above the contextual menu. By clicking on the arrows at the left and/or the right, all thumbnails of stored images and sequences during the current application can be viewed.

If a previously stored image is reloaded and modified, it can be stored again. If the image was previously linked to a patient file, at the moment of the new storing the device will ask if the image should be stored in the same directory. When you click Yes, the modified image will be stored in the same directory. If you click No, the image will be stored as a non attached file.

14.2 Store clip (Key number 21)

A frozen sequence can be stored on the hard disk by clicking the key Store clip (Key number 21). While storing, the following message is displayed on the screen: “Sequence recording”. A small clock appears in the Cineloop window with the message: “Cine saving”. Don’t press any key before these messages disappear.

Store clip is active in Freeze mode (See chapter 13).

The choice of the sequence format (avi and/or Dicom) is made in the Setting menu (See chapter 5.4). By default, the raw data format is always stored (env).

The length of the sequence for storing can be reduced, in order to store only the most important part of the sequence. A yellow triangle in the Cineloop window indicates the start of the sequence, and a green triangle indicates the end of the sequence. To reduce the length of the sequence, place the yellow triangles with the trackball at the wanted start, and the green triangle at the wanted end. Press Store clip. Only the part of the sequence between the two triangles will be stored.

If a sequence is stored while a patient file is open, the sequence will be stored in this file. If an examination has been started, meaning that a report is open, the sequence is stored in the report (see chapter 20). If there is no open patient file, the sequence will be stored as a non attached file. When the sequence has been stored, a thumbnail with the temporary name of the sequence appears above the contextual menu (example C090624-1134(3): C for clip, 09 for the year, 06 is the month, 24 the date, 11 the hour of storing, 34 is the minute of storing and 3 for the number of sequences stored at the same time). The thumbnail stays on the screen during the current application. The sequence can be loaded by clicking on the thumbnail with the trackball and Select.

If several images and sequences of the same application are stored, these are all displayed by thumbnails above the contextual menu. By clicking on the arrows at the left and/or the right, all thumbnails of stored images and sequences during the current application can be viewed.

If a previously stored sequence is reloaded and modified, it can be stored again. If the sequence was previously linked to a patient file, at the moment of the new storing the device will ask if the sequence should be stored in the same directory. When you click Yes, the modified sequence will be stored in the same directory. If you click No, the sequence will be stored as a non attached file.

14.3 Review (Key number 20)

All images and sequences stored in the PC memory can be reviewed and post-processed. Press the key Review to make the Review window, composed of two columns, appear on the screen.
The first column contains the list of patients (see chapter 19). A patient file can include one or several reports, as well as images and sequences. Click on the successive crosses to see all elements. The available images and sequences are listed in the second column.
Possibility to search a specific patient by entering a text with the alphanumeric keyboard in the black box under the title "Search" and pressing OK or Enter. If the text corresponds to a patient file, this one is highlighted in the list. Otherwise, an error message occurs. Enter another text to continue the search.
Beneath the list of patients is a list of files which are not attached to a patient file. Click on each file to see the list of non attached stored images and sequences in the second column.

The contextual Review menu appears on the screen.

Exit of the Review mode by clicking Review once again and return to the previously used imaging mode.

14.3.1 Multiview

Display of all stored images as miniatures on the screen when pressing Multiview. Possibility to select one or several images for printing or viewing by ticking the corresponding boxes. Selection of all images by pressing Select all. To de-select, press Disable all.
Print by 6: Printing of 6 images per page.
Print by 8: Printing of 8 images per page
View: Display of selected images. Press Clear or click on the cross to exit the View.
Click on the arrow to go from one page to the next.
Press Clear to exit the Multiview.

14.3.2 Selection

To select an image or a sequence, pass the cursor with the trackball on the names in the list in the second column. The names will now be highlighted successively in blue. A thumbnail of the selected image or sequence is displayed below the list. Press Select with the left button on the name in the list to load the image or the sequence immediately. Press Select with the right button on the name in the list to select the image or the sequence without loading it, in order to use the functions in the contextual Review menu.

14.3.3 Load

To select an image or a sequence, pass the cursor with the trackball on the names in the list in the second column. The names will now be highlighted successively in blue and a thumbnail of the selected image or sequence is displayed below the list. Press Select with the left button on the name in the list to load the image or the sequence immediately. An image or sequence can also be loaded after selection with the right Select button by pressing the key Load in the contextual Review menu. The following message is displayed on the screen during loading: « Image loading» or « Sequence loading». Don't press any key before this message disappears.
The loaded image or sequence appears on the screen with a white contour and the name of the sequence or the image in the upper left corner.

It is now possible to make post-processing (See chapter 16) or measures (See chapter 15) on the loaded image or sequence. After modifications, the image or sequence can be stored in its new version (See chapter 14.1 and 14.2 for the storing procedure).

14.3.4 Rename (Contextual menu)

To select an image or a sequence to rename, pass the cursor with the trackball on the list in the second column. The names will now be highlighted successively in blue. A thumbnail of the selected image is displayed below the list. Press Select with the right button.
The selected image or sequence can now be renamed by pressing the key Rename in the contextual review menu. The text can be changed by entering the new text with the alphanumeric keyboard. To validate the new name, press the key Enter on the alphanumeric keyboard, or press Select.
If the renamed image or sequence is from the current application and thus displayed as a thumbnail above the contextual menu, the new name will also appear on the thumbnail.

14.3.5 Export

To select an image or a sequence to export, pass the cursor with the trackball on the list in the second column. The names will now be highlighted successively in blue. A thumbnail of the selected image is displayed below the list. Press Select with the right button.
The selected image or sequence can now be exported to an external device.
To export, insert a CD or a USB device. Click on the key Export CD or Export USB in the contextual Review menu. The selected image or sequence is copied to the external media but not deleted from the hard disk storage. If no external media is available for exporting, an error message will occur.

14.3.6 Delete (Contextual menu)

To select an image or a sequence to delete, pass the cursor with the trackball on the list in the second column. The names will now be highlighted in blue. A thumbnail of the selected image is displayed below the list. Press Select with the right button.
The selected image or sequence can now be deleted by pressing the key Delete in the contextual review menu.

Exit of the Review mode by clicking Review once again and return to the previously used imaging mode.

15. Measures (Key number 19)

Measurements can be made on live images, on cine-loop images and sequences (see chapter 13 about Freeze and Cineloop mode), as well as on stored and loaded images and sequences (see chapter 14).
Activation and deactivation of Measure controls by pressing the key Measure (Key number 19). When in live mode, this will automatically freeze the image.
When playing a Cineloop sequence, measures can be made without freezing the sequence.
The available measures depend on the imaging mode.
Display of the contextual Measure menu, according to the imaging mode. The contextual measurement menu contains the general measures. For application specific measures, use the Protocol function (see chapter 18).
The device is ready for making the first measurement immediately.If a stored image with one or more measures is loaded, these measures can be corrected and/or remade, before the image is being stored again. The procedure for correction of measures is the same as for new measures. The image with the corrected and/or remade measurement can be stored again. See chapter 14.1 and 14.2 for the storing procedures.
Exit of the measure menu by clicking the key Measure.

15.1 Measures in B, CFM and Anatomic M Modes

The results of the measurements are displayed in the lower left corner of the screen. If the box B measures Values on US image is ticked on the Setting page (see chapter 5.4), the results will be displayed on the ultrasound image itself.

15.1.1 Distance (Contextual menu)

When turning on the measure mode, the curser appears automatically in the middle of the image, ready for measuring the first distance.
Place the marker at the wanted place with the trackball. Validation of the position by the left Select button. Place the second marker with the trackball at the wanted place. Click on the right Select button to pass from one marker to another in order to adjust the distance. The active marker is white. Click the left Select button to validate.
To reposition the whole distance, click on one of the small spots and drag the distance with the trackball. Validation of the new position by the left Select button.
The result of the distance measurement is displayed at the bottom-left corner of the screen.
4 distance measurements are available on one image.
Click on the key Distance in the contextual Measure menu with the Select button to activate a new distance..
When the box “Distances in Sequence” in ticked in the Settings menu (see chapter 5.4), 4 distances will automatically appear successively. The active distance measure is highlighted in a different color. If the box “Distances in Sequence” is not ticked, only the first distance is automatic, and further distance measurements can be selected in the contextual measurement menu.

15.1.2 Ellipse (Contextual menu)

Click on the key Ellipse in the contextual Measure menu with the Select button to activate an ellipse measurement (Circumference and Surface).
The Ellipse measurement is composed of three markers and several small spots. The curser is trapped by the first marker.
Place the first marker at the wanted place with the trackball. Validation of the position by the Select button (left or right).
Draw the size of the ellipse with the trackball. Click on the right Select button to pass from one marker to another in order to adjust the form and the size of the ellipse. The active marker is white. Click the left Select button to validate.
To reposition the whole ellipse, click on one of the small spots and drag the ellipse with the trackball. Validation of the new position by the left Select button.
The result of the ellipse measurement (Circumference and Surface) is displayed at the bottom-left of the screen.
2 ellipse measurements are available on one image.
Click on the key Ellipse in the contextual Measure menu with the Select button to activate a new ellipse.
The active ellipse measurement is highlighted in a different color.

15.1.3 Trace (Contextual menu)

Click on the key Trace in the contextual Measure menu with the Select button to activate a trace measurement (Circumference and Surface).

The trace measurement is composed of one marker and several small spots. The curser is trapped by the marker. Place the marker at the wanted place with the trackball. Validation of the position by the Select button (left or right). Draw the form of the trace with the trackball and join the first spot. Click on the right Select button to pass from one spot to another or drag the trackball in order to adjust the form of the trace. The active spot is white. Click the left Select button to validate. To reposition the whole trace, click in the middle of the trace and drag it with the trackball. Validation of the new position by the left Select button.
The result of the trace measurement (Circumference and Surface) is displayed at the bottom-left corner of the screen.
One trace measurement is available on one image.

15.1.4 Measures in B-Dual-Mode

15.1.4.1 Volume (Contextual menu)

Click on the key Volume in the contextual B-Dual Measure menu with the Select button to activate a volume measurement, composed of an ellipse and a distance measurement.
An ellipse will appear on one of the images, a distance on the other.
The ellipse is composed of three markers and several small spots. Click on one of the markers and place it at the wanted place with the trackball. Validation of the position by the Select button (left or right). Draw the size of the ellipse with the trackball. Click on the right Select button to pass from one marker to another in order to adjust the form and the size of the ellipse. The active marker is white. Click the left Select button to validate. To reposition the whole ellipse, click on one of the small spots and drag the ellipse with the trackball. Validation of the new position by the left Select button.
The distance is composed of two markers and several small spots. Click on one of the markers and place it at the wanted place with the trackball. Validation of the position by the Select button (left or right). Place the second marker with the trackball at the wanted place. Click on the right Select button to pass from one marker to another in order to adjust the distance. The active marker is white . Click the left Select button to validate. To reposition the whole distance, click on one of the small spots and drag the distance with the trackball. Validation of the new position by the left Select button.
The result of the volume measurement is displayed at the bottom-left corner of the screen.
One volume measurement is available on one double-image.
See chapter 6.12 for further information on the B-Dual Mode.

15.1.5 Arrow (Contextual menu)

Click on the key Arrow in the contextual measure menu to position an arrow on the image. The arrow is composed of two markers (the tip and the end) and a line connecting them. The curser is trapped by the first marker.
Place the first marker at the wanted place with the trackball. Validation of the position by the Select button (left or right).
Place the second marker with the trackball at the wanted distance. The arrow can turn at 360° around the tip or around the end. Click on the right Select button to pass from one marker to another (from tip to end) in order to adjust the arrow's length or its angle. The active marker is white . Click the left Select button to validate.
To reposition the whole arrow, click on the line and drag the arrow with the trackball. Validation of the new position by the left Select button.
5 arrows are available on one image.

15.1.6 Annotation (Contextual menu)

Click on the key Annotation in the contextual measure menu to position an arrow and a text on the image. Entering of a free text in the text box with the alphanumeric keyboard. Display of the list of pre-entered available user annotations by clicking Select with the Right button. Click Select on the wanted annotation. The annotation is positioned at the place of the curser. Click on the annotation with the left Select button to replace it. Validation of the new position by clicking Select with the left button.
See chapter 5.4 on how to add new annotations in each application.
In the Setting menu, the choice between adding the textbox before the arrow or in the reverse order can be made (see chapter 5.4).
10 annotations can be placed on one image.

15.1.7 Select (Contextual menu)

Click on the key Select in the contextual measure menu to pass successively from one measurement item on the screen to another. The selected measurement is highlighted. The selected measurement can now be deleted.

15.1.8 Print

Print: Printing of the currently displayed image with measures if any by pressing the key Print in the contextual Measure menu. If several printers are available and if the box “Select Printer at Print” is ticked (see chapter 5.4), the device proposes a selection of printers. Otherwise, printing is made on the default printer.

15.1.9 Delete (Contextual menu)

Click on the key Delete in the contextual measure menu to delete the last measure item made (measure/arrow/annotation), or the selected measure item (See chapter 15.1.7).

15.1.10 Delete all (Contextual menu)

Click on the key Delete All in the contextual measure menu to delete all measure items made (measure/arrow/annotation).

Exit of the Measure mode and return to Freeze mode by pressing the key Measure.
Exit of the Measure mode and return to live imaging by pressing the key Freeze.

15.2 Measures in M-Mode

15.2.1 Rate (Contextual menu)

When turning on the measure mode in M-Mode, the curser appears automatically in the middle of the M-specter, ready for measuring the rate. Click Select (left or right button) to make the distance markers appear on the M-specter. Place the curser on the wanted place of the first distance marker, click Select, and place the second distance marker with the trackball. Click on the right Select button to pass from one marker to another in order to adjust the positions. The active marker is white. Click the left Select button to validate.
To reposition the markers, place the curser on one of them and click Select to activate it. Follow the procedure above for the validation of the new position.
The result of the rate measurement, in bpm, is displayed at the bottom-left corner of the screen.
One rate measurement is available on an M-image.

15.2.2 Distance and time interval (Contextual menu)

Click on the key Distance in the contextual M menu to activate the measurement of distance and time interval.
The distance measurement is composed of two markers and several small spots. The curser is trapped by the first marker. Place the first marker at the wanted place with the trackball. Validation of the position by the Select button (left or right). Place the second marker with the trackball at the wanted place. Click on the right Select button to pass from one marker to another in order to adjust the distance. The active marker is white. Click the left Select button to validate.
To reposition the whole distance, click on one of the small spots and drag the distance with the trackball. Validation of the new position by the left Select button.
The result of the distance measurement is displayed at the bottom-left corner of the screen.
The time interval is calculated automatically depending on the distance, and the result is displayed at the bottom-left corner of the screen.
One distance-time interval measurement is available on an M-image.

15.2.3 Arrow (Contextual menu)

See chapter 15.1.5.
NB: In M-Mode, arrows can only be positioned on the M-specter. Maximum 5 arrows.

15.2.4 Annotation (Contextual menu)

See chapter 15.1.6.
NB: In M-Mode, annotations can only be positioned on the M-specter. 10 annotations can be placed on one image.

15.2.5 Select (Contextual menu)
See chapter 15.1.7.

15.2.6 Print
See chapter 15.1.8

15.2.7 Delete (Contextual menu)
See chapter 15.1.9.

15.2.8 Delete all (Contextual menu)
See chapter 15.1.10.

Exit of the Measure mode and return to Freeze mode by pressing the key Measure.
Exit of the Measure mode and return to live imaging by pressing the key Freeze.

15.3 Measures in PW and B/CFM/PW

15.3.1 Automatic measure (Contextual menu)
When turning on the measure mode in PW B/CFM/PW (Triplex) mode, the automatic measurement appears directly on the PW-specter, with the results of the following calculations displayed at the bottom-left corner of the screen:

- Rate
- RI (Resistance Index)
- S/D (Systole/Diastole)
- PI (Pulsatility Index)

If the angle correction (see chapter 9.7) is added, either during the examination on live images or during post-processing (see chapter 16.3.2), the results of the following calculations appear below the others at the bottom-left corner of the screen:

- V Sys (Systole speed)
- V Dias (Diastole speed)
- V AVG (Average speed)

The device is automatically selecting the maximum number of complete cycles available in the PW-specter, indicated by a white horizontal line. To adjust the number of cycles, place the trackball on either the left or the right marker in the PW-specter and click Select (left or right button). After adjustment of one marker, click Select with the right button to pass form one marker to the other. The active marker is white. Validation of the new position by the left Select button.

15.3.2 Semi-automatic measure (Contextual menu)
Click on the key Semi-automatic in the contextual measure menu to activate the semi-automatic calculation. The curser is trapped by the first marker in the PW-specter. Place the marker on the wanted place, and click Select (left or right button) to validate. Place the second marker at the wanted place with the trackball. Click on the right Select button to pass from one marker to another in order to adjust the positions. The active marker is white. Click the left Select button to validate. To reposition the markers, place the curser on one of them and click Select to activate it. Follow the procedure above for the validation of the new position.
The results of the following calculations are displayed at the bottom-left corner of the screen:

- RI (Resistance Index)
- S/D (Systole/Diastole)

If the angle correction (see chapter 9.7) is added, either during the examination on live images or during post-processing (see chapter 16.3.2), the results of the following calculations appear below the others at the bottom-left corner of the screen:

- V Sys (Systole speed)
- V Dias (Diastole speed)

15.3.3 Manual Trace measure (Contextual menu)
Click on the key Manual Trace in the contextual measure menu to activate the manual trace calculation. The system automatically detects the number of available complete cardiac cycles. Place the curser on the wanted place on the PW

specter and click Select. Trace the PW envelope manually. The system automatically detects when a complete cycle is traced. Click on the right Select button to pass from one marker to another in order to adjust the positions. The active marker is highlighted in red. Click on the left Select button to validate.
To adjust the trace, place the curser on the wanted place on the envelope trace and click Select in order to adjust the trace. Click Select with the left button to validate.
The results of the following calculations are displayed at the bottom-left corner of the screen:

- Rate
- RI (Resistance Index)
- S/D (Systole/Diastole)
- PI (Pulsatility Index)

If the angle correction (see chapter 9.7) is activated, either during the examination on live images or during post-processing (see chapter 16.3.2), the results of the following calculations appear below the others at the bottom-left corner of the screen:

- V Sys (Systole speed)
- V Dias (Diastole speed)
- V AVG (Average speed)

15.3.4 Rate (Contextual menu)

Click on the key Rate in the contextual measure menu to activate the measure of the rate. The device is automatically selecting the maximum number of complete cycles available in the PW-specter, indicated by a white horizontal line. To adjust the number of cycles, place the trackball on either the left or the right marker in the PW-specter and click Select (left or right button). After adjustment of one marker, click Select with the right button to pass form one marker to the other. The active marker is white . Validation of the new position by the left Select button.
The result of the rate measurement is displayed at the bottom-left corner of the screen.

15.3.5 Flow (Contextual menu)

Click on the key Flow in the contextual measure menu to activate the measure of the Flow. If the baseline is not centered, an error message will occur. Center the baseline (see chapter 9.8) in order to make the measurement.
The result of the flow measurement is displayed at the bottom-left corner of the screen.

15.3.6 Arrow (Contextual menu)

See chapter 15.1.5.
NB: In PW and B/CFM/PW Modes, arrows can only be positioned on the PW-specter. Maximum 5 arrows.

15.3.7 Annotation (Contextual menu)

See chapter 15.1.6.
NB: In PW and B/CFM/PW Modes, annotations can only be positioned on the PW-specter. 10 annotations can be placed on one image.

15.3.8 Select (Contextual menu)

See chapter 15.1.7.

15.3.9 Print

See chapter 15.1.8

15.3.10 Delete (Contextual menu)

See chapter 15.1.9.

Exit of the Measure mode and return to Freeze mode by pressing the key Measure.
Exit of the Measure mode and return to live imaging by pressing the key Freeze.

15.4 Measures in CW

15.4.1 Time (Contextual menu)

Click on the key Time to measure the time on the CW specter. The curser is trapped by the first marker.
Place the first marker at the wanted place with the trackball. Validation of the position by the Select button (left or right).
Place the second marker with the trackball at the wanted place. Click on the right Select button to pass from one marker to another in order to adjust the time measurement. The active marker is white. Click on the left Select button to validate.
The result of the time measurement is displayed in seconds at the bottom-left corner of the screen.

15.4.2 Speed (Contextual menu)

Click on the key Speed in the contextual menu. The curser is trapped by the marker. Place the marker on the CW specter at the wanted place and click Select (left or right). The result of the speed measurement is displayed in cm per seconds at the bottom-left corner of the screen.

15.4.3 Acceleration (Contextual menu)

Click on the key Acceleration to activate the measurement. The curser is trapped by the first marker.
Place it at the wanted place on the CW specter with the trackball and validate by the Select button (left or right). Place the second marker with the trackball at the wanted place. Click on the right Select button to pass from one marker to another in order to adjust the acceleration measurement. The active marker is white. Click on the left Select button to validate.
The result of the acceleration measurement is displayed at the bottom-left corner of the screen.

15.4.4 Arrow (Contextual menu)

See chapter 15.1.5.
NB: In CW mode, arrows can only be positioned on the CW-specter. Maximum 5 arrows.

15.4.5 Annotation (Contextual menu)

See chapter 15.1.6.
NB: CW mode, annotations can only be positioned on the CW-specter. 10 annotations can be placed on one image.

15.4.6 Select (Contextual menu)

See chapter 15.1.7.

15.4.7 Print

See chapter 15.1.8

15.4.8 Delete (Contextual menu)

See chapter 15.1.9.

15.4.9 Delete all (Contextual menu)

See chapter 15.1.10.

Exit of the Measure mode and return to Freeze mode by pressing the key Measure.
Exit of the Measure mode and return to live imaging by pressing the key Freeze.

15.5 Measures in 4D

Measurements can be made on 4D images in the multi-cut display (see chapter 12.3.4).

15.5.1 Distance (Contextual menu)

When turning on the measure mode, the curser appears automatically in the middle of the image, ready for measuring the first distance. See chapter 15.1.1.

15.5.2 Ellipse (Contextual menu)

See chapter 15.1.2.

15.5.3 Trace (Contextual menu)
See chapter 15.1.3.

15.5.4 Arrow (Contextual menu)
See chapter 15.1.5.

15.5.5 Annotation (Contextual menu)
See chapter 15.1.6.

15.5.6 Select (Contextual menu)
See chapter 15.1.7

15.5.7 Print (Contextual menu)
See chapter 15.1.8.

15.5.8 Delete (Contextual menu)
See chapter 15.1.9.

15.5.9 Delete all (Contextual menu)
See chapter 15.1.10.

Exit of the Measure mode and return to Freeze mode by pressing the key Measure.
Exit of the Measure mode and return to live imaging by pressing the key Freeze.

16. Post-processing

Post-processing controls are available on cine-loop images and sequences (see chapter 13 about the Freeze and Cineloop mode), as well as on stored and loaded images and sequences (see chapter 14).

16.1 B-Mode

In B mode, the following controls are available for post processing:

16.1.1 B controls

Gain: See chapter 6.3
TGC: See chapter 6.4
Zoom: See chapter 6.6
Dynamic: See chapter 6.7
Noise Reject: See chapter 6.8
Ima-View: See chapter 6.10
Gamma: See chapter 6.17
ImaClean: See chapter 6.14
Ima Level: See chapter 6.16
Color: See chapter 6.18.2
Anatomic M: This function can both be activated and adjusted in post-processing. See chapter 6.15 on how to use this function.
Extra B Tools (B Average, Color, TEQ): see chapter 6.18
Display/Size (Orientation): See chapter 6.19

16. 2 M-Mode

In M mode, the following controls are available for post-processing:

16.2.1 B controls

Gain: See chapter 6.3
TGC: See chapter 6.4
Dynamic: See chapter 6.7
Gamma: See chapter 6.17
Ima Level: See chapter 6.16
Extra BM Tools (B Average, Color BM): See chapter 6.18 and 7.3

16.3 CFM-Mode

In CFM mode, the following controls are available for post-processing:

16.3.1 CFM controls

Gain: See chapter 8.4
Invert: See chapter 8.1.1.1. This control is only available in CFM Velocity mode
Reject: See chapter 8.7
Echo Filter: See chapter 8.8
CFM Average: See chapter 8.11
Wall Filter: See chapter 8.9

16.3.2 B controls

Gain: See chapter 6.3
TGC: See chapter 6.4
Dynamic: See chapter 6.7
Gamma: See chapter 6.17

Ima Level: See chapter 6.16
Extra B tools (B Average, Color): See chapter 6.18
Display (Orientation): See chapter 6.19

16.4 PW-Mode

In PW mode, the following controls are available for post-processing:

16.4.1 PW controls

Gain: See chapter 9.3
Angle: See chapter 9.7
Invert: See chapter 9.9
Baseline: See chapter 9.8
Noise Reject: See chapter 9.14
Wall Filter: See chapter 9.15
Color: See chapter 9.17

16.4.2 B controls

Gain: See chapter 6.3
TGC: See chapter 6.4
Dynamic: See chapter 6.7
Gamma: See chapter 6.17
Extra B tools (B Average, Color): See chapter 6.18
Ima Level: See chapter 6.16

16.5 B/CFM/PW-Mode

In B/CFM/PW Triplex mode, the following controls are available for post-processing:

16.5.1 PW controls

Gain: See chapter 9.3
Angle: See chapter 9.7
Invert: See chapter 10.1.1
Baseline: See chapter 9.8
Noise Reject: See chapter 9.14
Wall Filter: See chapter 9.15
Color: See chapter 9.17

16.5.2 CFM controls

Gain: See chapter 8.4
Reject: See chapter 8.7

16.5.3 B controls

Gain: See chapter 6.3
TGC: See chapter 6.4
Dynamic: See chapter 6.7
Gamma: See chapter 6.17
Extra B tools (B Average, Color): See chapter 6.18
Ima Level: See chapter 6.16

16.6 CW Mode

In CW mode, the following controls are available for post-processing:

16.6.1 CW controls

Gain: See chapter 11.2

Baseline: See chapter 11.4
Noise Reject: See chapter 11.6
Wall Filter: See chapter 11.7
Color: See chapter 11.10
Invert: See chapter 11.9

16.6.2 B controls

Gain: See chapter 6.3
TGC: See chapter 6.4
Dynamic: See chapter 6.7
Gamma: See chapter 6.17
Extra B tools (B Average, Color): See chapter 6.18
Ima Level: See chapter 6.16

16.7 4D Mode

In 4D mode, the following controls are available for post-processing:

16.7.1 4D controls

Rotate: See chapter 12.2.9
Volume: See chapter 12.3.2
Multicut: See chapter 12.3.3
Slanting cut: See chapter 12.3.5
Cube: See chapter 12.3.4
Explorer 3D: See chapter 12.3.6
Smoothening: See chapter 12.2.15
Opacity: See chapter 12.2.6
Luminosity: See chapter 12.2.7
Zoom: See chapter 12.2.8
Reject: see chapter 12.2.10
Contrast: See chapter 12.2.11
Color: See chapter 12.2.12

16.7.2 B controls

Gain: See chapter 6.3
Dynamic: See chapter 6.7
Gamma: See chapter 6.17

16.8 Measures

Measures can be made in post-processing on previously stored images and sequences. Load the selected image or sequence (see chapter 14.3) and follow the above described procedures for making a measure (see chapter 15).
All measures on stored images and sequences can be corrected and remade in post-processing. Load the image or sequence with the measure (see chapter 14.3). The procedure for correction of measures is the same as for new measures (see chapter 15). After correction and/or remake of the measure, the image or sequence can be stored again with the new measure by clicking Store Image or Store sequence (see chapter 14).

17. Applications and Presets (Key number 33)

17.1 Applications

Activation of the list of applications and presets by clicking the key Preset (Key number 33). The available applications are displayed on the upper-left of the screen.
Click Select (left or right button) to choose an application.
It is impossible to change application when a patient file with a report is open.

Exit of the list of applications and presets by clicking the key Preset.

17.2 Presets

For each application, one or several predefined presets are stored in the device, together with the presets created by the user(s) (see chapter 17.2.2). The number of factory presets depends on the application. When an application is selected (see chapter 17.1), the list of available presets is displayed at the middle-left of the screen. When passing the curser on the list, each preset is highlighted successively.
A preset includes all adjustable parameters and controls in all modes.

17.2.1 Load a preset

Pass the curser on the list, and click Select with the left button on the wanted preset to load the application with the selected preset.
When the application and preset have been loaded, the device returns to the imaging mode, and the list of applications and presets disappear. The current preset and application are displayed in the upper-right of the screen.
If the imaging mode was live during the selection of application and preset, the device returns to a live B-image, no matter which mode was used before changing the application and the preset. Selection of another imaging mode can now be made (see chapter 7 on M-Mode, chapter 8 for CFM-Mode, chapter 9 for PW-Mode, chapter 10 for B/CFM/PW mode, chapter 11 for CW-Mode).
If the imaging mode was frozen during the selection of application and preset, it is necessary to unfreeze the device by clicking Freeze before having access to the new loaded application and preset with a live B-image. After unfreezing, same procedure as described above.

17.2.2 Create a new preset

To create a preset, the parameters and controls should be adjusted as a start. See the chapters according to each mode and available controls for details. When the adjustments are satisfying, press Preset (Key number 33). Choose the wanted application in the displayed list and click Select.
Click on the key New in the contextual Preset menu. A window appears in the preset column with the curser ready for entering the name of the new Preset with the alphanumeric keyboard. After entering the name of the new preset, validation of the name by clicking Enter on the alphanumeric keyboard or by clicking Select. The new preset is stored in the device. The device returns to the imaging mode with the new preset loaded.
Each user can create as many presets he wants.

17.2.3 Rename a preset

Activation of the list of applications and presets by clicking the key Preset (Key number 33). The available applications are displayed on the upper-left of the screen.
Pass the curser on the list of applications and Press Select (right or left button) on the wanted application in which the preset should be renamed. Afterwards, press Select with the right button on the preset that should be renamed. Click on the key Rename in the contextual Preset menu.
A window appears in the preset column with the curser ready for entering the new name of the Preset with the alphanumeric keyboard. After entering the new name of the preset, validation of the name modification by clicking Enter on the alphanumeric keyboard or by clicking Select. The new name of the preset is stored in the device.
The device does not automatically load the renamed preset. See chapter 17.2.1 on how to load a preset.
Only user presets can be renamed. Factory presets made by ECM cannot be renamed.

17.2.4 Delete a preset

Activation of the list of applications and presets by clicking the key Preset (Key number 33). The available applications are displayed on the upper-left of the screen. Pass the curser on the list of applications and Press Select (right or left button) on the wanted application in which the preset should be deleted.
Afterwards, press Select with the right button on the preset that should be deleted. Click on the key Delete in the contextual Preset menu. The device is deleting the selected preset.
If the preset selected for delete is loaded and in use, the device refuses to delete it and an error messages occurs. Load another preset (See chapter 17.2.1) and follow the procedure for deleting a preset once again.
Only user presets can be deleted. Factory presets made by ECM cannot be deleted.

Exit of the Preset and Application menu by pressing the key Preset.

18. Protocols (Key number 18)

Activation and deactivation of the list of protocols by the key Protocols (Key number 18).
Protocols mean application specific measures and tables.
The available protocols depend on the selected Application and Preset (see chapter 17) and on the selected mode.
The protocol “Factory” contains all standard tables and measures according to each application. The user can decide individually which of these tables and measures should be used by entering a user protocol. See chapter 18.2.1.
After activation of the protocols, the available protocols are displayed in a window on the left of the screen. The contextual Protocol menu is displayed on the screen.
Protocols can be used either with an open patient file or without an open patient file. See chapter 19 about patient files.
When a patient file is open with a report, the results of each measurement and table are automatically added to the report of the patient. See chapter 20 about reports.
Each time a measure from the protocol is made, the image can be stored (see chapter 14).
The image with the measure from the protocol can be printed directly by the key Print in the contextual protocols menu.
Protocol measurements on stored and reloaded images can be corrected and remade. See chapter 16.7 about post-processing.

18.1 How to make a protocol measurement

In the Preset menu, select the wanted application and preset. Select the imaging mode (B, M, CFM, PW, CW). Press Protocol. The available protocol calculations are displayed in a list in the window on the left of the screen. When passing the curser on the list, the protocol calculations are highlighted successively. To load a protocol calculation, click Select. The measurement tool is ready on the image.
The curser is trapped by the first marker of the measurement. Place the first marker at the wanted place with the trackball. Validation of the position by the Select button (left or right). Place the second marker with the trackball at the wanted place. Click on the right Select button to pass from one marker to another in order to adjust the measurement. The active marker is white. Click the left Select button to validate.
To reposition the whole measurement, click on one of the small spots and drag the measurement with the trackball. Validation of the new position by the left Select button.
The result of the measure is displayed on the screen.
The image with the measurement and the abbreviation of the protocol calculation can be stored or printed.

18.1.1 Protocol measurements with “groups”

In some modes in all applications, for instance PW and CW, the protocols are grouped, for instance by organs. In the Preset menu, select the wanted application and preset. Select the wanted imaging mode. Press Protocol. The available protocol groups, marked with >, are displayed in the list in the window on the left of the screen. When passing the curser on the list, the protocol groups are highlighted successively.
To open a group, click Select. The list of protocol calculations for the opened group is displayed, in PW for instance Doppler automatic, Doppler Manual and Heart Rate. When passing the curser on the list, the protocol calculations are highlighted successively. To load a protocol calculation, click Select.
The measurement tool is ready on the image. See chapter 15 about measures and their use.
To return from an opened group to the list of available protocol groups, click Select in the top of the protocol window at the name of the group. The list of protocol groups is now displayed. Follow the procedure described above to select a new protocol group and calculation.

18.1.2. Protocols in Dual

In Dual mode (see chapter 6.12), it is possible to make several protocol measurements simultaneously at the same screen display. In the Preset menu, select the wanted application and preset. Activate the Dual mode (contextual B menu), press Protocol. Make the wanted protocol measurement on the first image (see chapter 18.1). Repeat the procedure for the wanted protocol measurement on the second image. Both images can now be stored and/or printed simultaneously.

18.1.3 User defined distance

In all protocols in B and CFM mode, a User defined distance is available. Click in the list of protocol measurements on “User defined distance”. It is now possible to rename the distance. Click Enter, and the curser for making the user defined

distance with the specific name is available on the screen. The measurement is made like described in chapter 18.1. If a patient file is open (see chapter 19), the user defined distance will be stored in the report with the specific name. The renamed user defined distance stays available at the end of the protocol measurement list until the device is shut down. If you wish to store a user defined distance also after turning off, you should use the function “User defined protocol item” (see chapter 18.2.3).

18.2 User protocols

The user can decide individually which measures and tables should be used by entering a user protocol.
Activation of the user protocols in the Setting menu (see chapter 5.4). Click Select (left) in the window User Protocols and Annotations. A new screen window is displayed. The list of available applications is displayed in the first column in the left window.
Click Select on the wanted application. In the second column in the left window, the list of names of the available protocols in the selected application is displayed.
When clicking Select on one of the protocols, the content of the protocol with its different measurements and tables is shown in the right part of the window. The list of available authors for each table is displayed under the list of sub-calculations. Some protocols do not contain any authors.

18.2.1 Create a new user protocol

Activation of the user protocols in the Setting menu (see chapter 5.4), by clicking Select (left) in the window User Protocols. A new screen window is displayed with the list of available applications in the first column in the left window.
Click Select on the wanted application in which you want to create a new protocol.
In the screen window User protocols, click Select in the window “Create a protocol in selected application”. The new protocol appears in the second column in the list and is ready to be defined in the right of the window.
To rename the new protocol, enter the text with the alphanumeric keyboard in the title box called Protocol Edition above the list of calculations.
Select the content of the new user protocol by ticking the box corresponding to each measure and calculation.
The authors available for each table are displayed in the lower part of the screen. Select the wanted author(s) by ticking the corresponding box for each table. If no author is selected by the user, the system automatically selects the first author in the list.
When the selection of the content of the user protocol is determined, press “Save selected protocol” at the bottom of the screen. The new user protocol is now stored in the device.
If a selected calculation necessitates one or more measures that were not yet included in the protocol, an error message occurs when saving the protocol: “Dependent calculations are missing. Do you want to add them”. Click OK, and the device will automatically include them.

18.2.2 Delete a user protocol

Select the wanted user protocol in the list in the second column. Click Select in the window “Delete the selected protocol”.
It is impossible to delete the protocol “Factory” entered by ECM.

18.2.3 User defined items

Possibility to add user defined distances, elliptic surfaces and elliptic volumes to both factory protocols and user protocols.
Select the application in the upper left list where the user defined item should be added. Click on the window User Defined Items. Click New. Enter the name of the item and select the wanted measurement by using the scroll bar (distance, elliptic surface or elliptic volume). Click Apply. Click Cancel to cancel the operation. Click OK to exit the user defined protocol items.
The new item now appears in the list of protocol measurements in the selected application. It can be used in the factory protocol where it will be at the end of the list, or selected and used in a user protocol.
For deleting a user defined item, click on the window User Defined Items. Select the user defined item that should be deleted in the list and click Delete. Click OK to exit the user defined items.

18.2.4 Exit of user protocols menu

Deactivation of the user protocols by clicking Setting or Clear. The device returns to the Setting menu. Click Setting or Clear once again to return to the imaging mode.

NB: After creation of a new user protocol, this protocol will not be activated automatically. See the chapter 18.2.4 on how to activate the user protocol.

18.2.5 Activation of user protocols

The user protocols are activated in the Patient menu (see chapter 19). It is possible to activate a user protocol without opening a patient file. Start by selecting the application in which the user protocol is made (see chapter 17.1 about applications and presets). Press the key Patient. The Patient screen window is displayed. To activate a user protocol, click on the arrow in the protocol window in the middle of the screen on the right. Select the name of the wanted user protocol in the list. Press the key Patient to exit the Patient page and return to the imaging mode.
When activating the protocol menu by clicking Protocol, the content of the selected user protocol is displayed.
See chapter 19 on how to activate a user protocol with an open patient file.

18.3 Protocols in general application

In the Preset menu, select the application General and the wanted preset (see chapter 17). Select the imaging mode (B, M, CFM, PW, CW). Press Protocols. The available protocol calculations are displayed in a list in the window on the left of the screen. When passing the curser on the list, the protocol calculations are highlighted successively.
To load a protocol calculation, click Select. The measurement tool is ready on the image.
The curser is trapped by the first marker of the measurement. Place the first marker at the wanted place with the trackball. Validation of the position by the Select button (left or right). Place the second marker with the trackball at the wanted place. Click on the right Select button to pass from one marker to another in order to adjust the measurement. The active marker is white. Click the left Select button to validate.
To reposition the whole measurement, click on one of the small spots and drag the measurement with the trackball. Validation of the new position by the left Select button.

The result of the measure is displayed in the middle of the window.

If the measure is interpreted by a table or is used for a calculation, the result is displayed in the bottom of the window.

18.3.1 Measurement of Intima Media Thickness (IMT)

The measurement of Intima Media Thickness (IMT) is available in B Mode in the following applications: General and Vascular.
Load the wanted application (see chapter 17). Press Protocol.
The measure should be made on a longitudinal cut of a vessel.
Select Intima Media in the Protocol in the left of the screen. The curser is trapped by a marker. Place the marker on the selected place on the image. A rectangle appears on the screen. The rectangle can be repositioned immediately with the trackball. Validation of the position by the left Select button. The system automatically detects the intima, displayed with a purple line inside the box. The size of the rectangle should be adjusted so that it includes both the upper and lower artery walls. Click on the side of the rectangle to adjust the size with the trackball. Using a too small rectangle would lead to irrelevant measurement.
The results of the following measurements and calculations are displayed in the lower left part of the screen:

- Intima Media Thickness
- Standard deviation
- Width of the vessel

The measure is made on the lower intima wall. In order to measure the upper intima wall, make an image rotation (see chapter 6.19). This will put the image upside-down while the measuring rectangle stays the same. Follow the above described procedure.
This measurement is only indicative and is highly user-dependent.

18.3.2 Measurement of 3D Volume

This measurement is composed of three parts and used for a volume calculation: Start by making the first two distance measurements (Width, Height) as described above. Defreeze. Freeze again when the wanted cut is found. Load the last measurement (Depth) by clicking left Select and make the third distance measurement. The volume calculation is made automatically by the device.

See the list of the content of the general protocol in chapter 29.

18.4 Protocols in Abdominal application

Same procedure as for the above listed protocols.
For measurements composed of three parts used for a volume calculation (for instance Prostate): Start by making the first two distance measurements (Width, Height) as described above. Defreeze. Freeze again when the wanted cut is found. Load the last measurement (Depth) by clicking left Select and make the third distance measurement. The volume calculation is made automatically by the device.
See the list of the content of the abdominal protocol in chapter 29.

18.5 Protocols in Anesthesia

Same procedure as for the above listed protocols.
See the list of the content of the anesthesia protocol in chapter 29.

18.6 Protocols in Cardiology application

In the Preset menu, select the application Cardiology. Select the imaging mode (B, M, CFM, PW, CW). Press Protocols. The available protocol calculations are displayed in a list in the window on the left of the screen. All protocol calculations marked with > indicate a group. See chapter 18.1.1 about how to use the grouped protocols.
To return from an opened group to the list of protocol calculations, click Select in the top of the protocol window at the name of the group. The list of protocol calculations and groups is now displayed. Follow the procedure described above to select a new protocol group and calculation.

18.6.1 Body Surface Area

To obtain the calculation of Body Surface Area and cardiac output, a patient file must be opened in cardiology application and Height and Weight of the patient should be added. See chapter 19 about patient files.

18.6.2 Protocols in cardiology application in B mode

Several calculations, like Simpson, need several measurements. Click Left Select to load the first measurement tool, for instance diastole volume. Draw the contour with the trackball. Click Select Left to validate. Search the image corresponding to the systole in the cineloop, or defreeze and scan before freezing again. Click Select Left in the middle-left of the screen on the following measurement, for instance systole volume, to load the measure tool. Draw the contour and click Left Select to validate. The results and calculations are displayed in the lower left part of the screen.

18.6.3 Protocols in cardiology application in Anatomic M mode

See chapter 6.15 about how to activate and use the Anatomic M mode.
This mode can also be activated on a frozen B image directly from the contextual Protocol menu.
The following measurements are only available on the Anatomic M specter: Heart rate, Teichholz.

See chapter 15.3 about how to make measurements in PW mode, and chapter 15.4 about measurements in CW mode.
See the list of the content of the cardiology protocol in chapter 29.

18.7 Protocols in Gynecology

Same procedure as for the above listed protocols.
For measurements composed of three parts (for instance Left and Right Ovary): Start by making the first two distance measurements (Width, Height) as described above. Defreeze and scan. Freeze again when the wanted cut is found. Load the last measurement (Depth) by clicking left Select and make the third distance measurement.
See the list of the content of the gynecology protocol in chapter 29.

18.8 Protocols in obstetrics

In the Preset menu, select the application Obstetrics. Select the imaging mode (B, M, CFM, PW). Press Protocols. The available protocol calculations are displayed in a list in the window on the left of the screen. When passing the curser on the list, the protocol calculations are highlighted successively.
To load a protocol calculation, click Select. The measurement tool is ready on the image.
The curser is trapped by the first marker of the measurement. Place the first marker at the wanted place with the trackball. Validation of the position by the Select button (left or right). Place the second marker with the trackball at the wanted place. Click on the right Select button to pass from one marker to another in order to adjust the measurement. The active marker is white. Click the left Select button to validate.
To reposition the whole measurement, click on one of the small spots and drag the measurement with the trackball. Validation of the new position by the left Select button.

The result of the measure is displayed in the middle of the window.

The author of the table is displayed in the middle of the window, beneath the result of the measurement. If several authors are available for a table, click on the line Authors. The selection of Authors is displayed. Click Select on the wanted author.

If the measure is interpreted by a table, the result of the table is displayed in the bottom of the window, for instance the gestational age.
When no patient file is open, the system calculates automatically the LMP and EDD, displayed below the result of the measurement, according to the selected author.

The obstetrical tables are generally limited to a certain number of gestational weeks, most often 42 weeks. The calculations of longer pregnancies or measurements exceeding the standard tables are possible but the results are then displayed with a specific indicator: The following character (!) is used on the screen display, in examination reports and on print-outs. In the graphs, the extrapolated zones are indicated in red.
See the list of the content of the obstetrics protocol in chapter 29.

18.9 Protocols in Pediatrics

Same procedure as for the above listed protocols.
See the list of the content of the pediatrics protocol in chapter 29.

18.10 Protocols in Small parts application

Same procedure as for the above listed protocols.
For measurements composed of three parts used for a volume calculation (for instance Thyroid): Start by making the first two distance measurements (Width, Height) as described above. Defreeze. Freeze again when the wanted cut is found. Load the last measurement (Depth) by clicking left Select and make the third distance measurement. The volume calculation is made automatically by the device.
See the list of the content of the small parts protocol in chapter 29.

18.11 Protocols in Urology

Same procedure as for the above listed protocols.
For measurements composed of three parts used for a volume calculation (for instance Bladder): Start by making the first two distance measurements (Width, Height) as described above. Defreeze. Freeze again when the wanted cut is found. Load the last measurement (Depth) by clicking left Select and make the third distance measurement. The volume calculation is made automatically by the device.
See the list of the content of the urology protocol in chapter 29.

18.12 Protocols in Vascular

In the Preset menu, select the application Vascular. Select the imaging mode (B, M, CFM, PW). Press Protocols. The available protocol calculations are displayed in a list in the window on the left of the screen. All protocol calculations marked with > indicate a group. See chapter 18.1.1 about how to use the grouped protocols.

To return from an opened group to the list of protocol calculations, click Select in the top of the protocol window at the name of the group. The list of protocol calculations and groups is now displayed. Follow the procedure described above to select a new protocol group and calculation.

See the list of the content of the vascular protocol in chapter 29.

Exit of the Protocol menu by pressing the key Protocol.

19. Patient file (Key number 31)

Activation and deactivation of the patient menu and patient files by clicking the key Patient (Key number 31).
The Patient menu is composed of 4 different parts.
In the left-upper window, the list of existing patients is displayed. The patients are listed by their names and/or ID. The first name, if it has been entered, is also displayed.
Only the left Select button is available for use in the patient menu.
To list the patients alphabetically, click on the column Name. When clicking again, the list is alphabetically from the end of the alphabet. Click on the column ID for listing according to ID.
Click Select on the patient to open the patient file.
Exit of the patient menu by clicking the key Patient again.
When selecting an existing patient file, the previously made reports are listed beneath the list of patients. When clicking on one of the reports, the content of the report is displayed on the screen.
Click Unselect in the box below the list of patients to deselect the patient file.
Click on the key Patient to exit the patient menu and return to imaging mode.

19.1 Create a new patient

Activation of the patient menu by clicking the key Patient. In the upper-right window, click New with the left Select button. The patient information fields get accessible, and the curser is ready in the field Name.
Fill in the new patient file with the following information by entering the text with the alphanumeric keyboard: Name, ID, First name and Address. Only name and/or ID are necessary for listing and searching one patient amongst others. Other patient data can be filled in if wanted. Enter the sex of the patient by choosing between male/female in the menu proposed by the device. Enter the birthday of the patient, composed by the date, the month and the year, with the alphanumeric keyboard. The device automatically passes from the date to the month and to the year. The device automatically calculates the patient's age. It is also possible to enter the patient's age in years. Enter the comments in the field provided for this, and the referent doctor if any.
Validation by clicking Save. The patient's data are stored and the patient is added to the list of existing patients, displayed in the upper-left part of the screen.
Click Cancel in order not to store the patient file.
Click Unselect in the box below the list of patients to deselect the patient file.
Click on the key Patient to exit the patient menu and return to imaging mode.

19.2 Modify a patient

Activation of the patient menu by clicking the key Patient. Select the patient to modify in the list of existing patients. In the upper-right window, click Modify with the left Select button. The patient information fields get accessible.
After modifying the patient data, click Save to validate. The modified data of the patient are stored.
If you do not want to store the changes, click Cancel with the left Select button instead of Modify. The modifications will not be stored and the patient data stay the same.
Click Unselect in the box below the list of patients to deselect the patient file.
Click on the key Patient to exit the patient menu and return to imaging mode.

19.3 Search a patient

Activation of the patient menu by clicking the key Patient. Click Select in the empty white field situated just below the list of existing patients, and enter the text for searching. Choose if you want to search by Patient Name or ID by ticking the corresponding box.
Click Search to start searching for the entered text.
The result of the research is highlighted.
If several patients correspond to the research, they are displayed in the top of the patient list. Select the wanted patient or make a more precise research by following the procedure described above.
If only one patient corresponds to the research, the patient is highlighted and the patient data are displayed in the upper-left window, ready for modifying, starting an examination or consulting an existing examination report.
Click Unselect in the box below the list of patients to deselect the patient file.
Click on the key Patient to exit the patient menu and return to imaging mode.

19.4 Start an examination

Before choosing the patient, choose the application and preset in which the examination should be operated (see chapter 17). The examination including available protocols (see chapter 18) is determined by the selected application.
Activation of the patient menu by clicking the key Patient. Select an existing patient by clicking Select in the patient list or create a new patient (see chapter 19.1).
According to the applications one or several protocols are available in the middle of the window. If the user has created any individual user-protocols, these are also available for selection (see chapter 18.2). Select the wanted protocol in the menu by clicking Select.
Depending on the applications, different information which is necessary for the examination can be entered. After entering this information, click Start. The device returns to the imaging mode.
To start the examination, click Start in the middle-left part of the window.
When an examination with a selected patient is started, the name of the patient is displayed in the upper-right part of the screen.
In order to get access to the reports, it is necessary to open a patient file and start an examination (see chapter 19).
It is possible to change the probe when a patient file is open. It is also possible to change preset when a patient file is open.
To change application, the patient file must be closed and re-opened after changing the application (see chapter 17).

19.4.1 Examination without report

If a patient is only selected, without the user pressing start, the following message is displayed in the imaging mode: “Exam without report”. In this case, the measurements etc. are not stored in the patient’s report. If images and sequences are stored with a selected patient, they will be attached to the patient file in the Review menu.
To exit this mode and open a report, click Start in the Patient page.
To exit this mode and quit the patient, click Unselect in the left part of the Patient page.

19.4.2 Examination in Obstetrics

19.4.2.1 Entering the LMP

When starting an examination in the application Obstetrics, the device automatically enables the user to enter the last menstrual period in the field LMP. The last menstrual period is used for several calculations in the obstetrical protocol.
Enter the LMP either with the alphanumeric keyboard before starting the examination.
When the LMP is entered, the GA according to this date is displayed on the screen in the imaging modes (GA Ref.). The percentiles are calculated according to the GA Ref. The system also enables to estimate the GA based on the measurement result by pressing GA Estimation in the contextual OB protocol menu. If this is judged more correct by the user than the initial GA, the user can validate the new LMP by pressing LMP Validation in the contextual OB protocol menu. The new, validated LMP date now becomes the GA reference.
NB: The date format is selected in the Settings menu (see Chapter 5.4).

19.4.2.2 Without entering the LMP

However, it is also possible to start an examination without entering the LMP information.
In this case, no GA Ref is displayed. The contextual obstetrical protocol menu then enables to estimate the Gestational age according to the measures by pressing GA Estimation in the contextual OB protocol menu. If the user judges this date to be correct, the LMP can be validated by pressing LMP Validation in the contextual OB protocol menu. The validated LMP date now becomes the GA reference.

19.4.2.3 Obstetric Report mode GA

Access to this mode in the Setting menu (chapter 5.4) when ticking the box “Obstetric Report mode GA”. In this mode, all available protocol measures are used for calculating the GA.
You can still press GA estimation in the contextual OB protocol menu to see the new calculated LMP and EDD if necessary.

19.4.2.4 Multiple pregnancies/ Number of fetuses

When a patient file is open in the application Obstetrics, a choice can be made between Single, Twin or Triplet births. Click in the middle of the box in the Patient menu in front of Number of fetuses (Nb fetuses) to get access to the list. If Twin (2) or Triplet (3) is selected the boxes T1 and T2 on the bottom of the screen indicate twins, and Tr1, Tr2 and Tr3 triplets. The boxes are displayed when the image is frozen. The boxes can be activated by clicking Select on the box in order to allocate

an image, a measurement or a calculation to s specific fetus. The selected indication, for instance T2 for Twin 2, is displayed just underneath the image.
If the image is printed, this fetus indication is also printed.
All measures and calculations are made separately for each fetus.
In the report (see chapter 20), the results are listed separately for each fetus.

19.4.3 Examination in Cardiology

When starting an examination in the application Cardiology, the device automatically enables the user to enter the height in m and the weight in kg of the patient. This information is used for the calculation of the Body Surface Area and Cardiac output (see chapter 18.6.1).

19.5 Adding elements to the report

When a patient file is open, the measures and calculations available in the chosen protocol are automatically added to the report when the measure is validated. A number in parenthesis indicates how many times this measure was made.
Images can be stored in the report by pressing Store Image.
Sequences can be stored by pressing Store Clip.
When a calculation or ratio, based on the measures which have been made, is available, this is indicated by a triangle in the protocol list. Click on the calculation or the ratio to validate it and add it to the report.

19.6 Stop an examination

Activation of the patient menu by clicking the key Patient. Click Stop in the middle of the patient window. The patient file is closed and all fields get empty.

Exit of the Patient menu by pressing the key Patient or by pressing the key Clear. The device returns to the imaging mode, with no patient name displayed in the upper-right part of the screen.

20. Report (Key number 32)

Activation of the function Report by pressing the key Report (Key number 32).
The report is always linked to a patient. It is thus necessary to open a patient file and start an examination in order to get access to the report (see chapter 19.4).
Return to the imaging mode for measures etc. by clicking Report once again or Clear. The report stays active until the patient file is closed.
The report contains the following information from the patient file: Name, First name, Age, Birthday, Referent doctor. This information can be changed in the Patient menu (See chapter 19).
The report also contains the date of the examination and the operator name. The operator name is entered in the Setting menu (see chapter 5.4).
Entering of comments in the window Comments by the alphanumeric keyboard. Validation by clicking Comments OK.
Entering of a conclusion in the window Conclusion by the alphanumeric keyboard. Validation by clicking Conclusion OK.
All elements which have been added to the report during the examination with an open patient file are stored in the report and visible when clicking on each element.
The measures from the protocols are listed in the report. If the same measurement was made twice or more, the average result is calculated in the report.

20.1 Display of Report

The report can be visualized in two ways, either as a list or as a text. When the report is displayed as a list, click in the right-bottom corner on the window Text to change to the display as a text.
To return to the list visualization, click on the same window, now named List.

20.1.1 List display of Report

All information is displayed in the list in a compressed way.
The stored images are listed at the end of the report by their names. Click on the name of the image to see the icon displayed in the top of the screen.
If you want to delete a measurement in the report, place the curser on the wanted measurement and click Select. The measure is highlighted in the list. Click in the box Delete on the left of the screen to erase the measurement.

20.1.1.1 List display of a report in Obstetrics

When a measure is used in a table, the author of the table is displayed next to the measure with the corresponding percentile. The graphical representation of the percentile is displayed in the top of the screen when clicking on the measure.
If several authors are available for the same table in the selected protocol, the author can be changed by clicking on the name of the active author. The list of available authors is displayed. Select the wanted author. Graphs, percentiles etc. are recalculated according to the used author.
The LMP can also be changed in the report by clicking on the date.
The following information is also displayed in the report: GA, Conception date, Due date.

Click in the left-bottom corner on the window Text to change to the display as a text.
To return to the list visualization, click on the same window, now named List.

20.1.2 Text display of Report

All information is displayed as a text, with the layout that will be used for printing.
Images and graphical representations are showed at the end of the text report.

20.1.2.1 Text display of a report in Obstetrics

When a measure is used in a table, the author of the table is displayed next to the measure with the corresponding percentile. The graphical representation of the percentile is displayed at the end of the report.
The following information is also displayed in the report: GA, Conception date, Due date.

Click in the left-bottom corner on the window List to change to the display as a list.

To return to the text visualization, click on the same window, now named Text.

20.1.3 Images

Click on Images in the middle-left of the screen to display the images stored during an examination in Multiview. Tick the corresponding box for each image which should be printed in the report. After selection, only the selected images are displayed when in Text display of the Report. Exit of Multiview of images by clicking on the cross in the lower right corner.

20.1.4 Graphs

Click on Graphs in the middle-left of the screen to display the graphs stored during an examination in Multiview. Tick the corresponding box for each graph which should be printed in the report. After selection, only the selected graphs are displayed when in Text display of the Report. Exit of Multiview of graphs by clicking on the cross in the lower right corner.

20.1.5 Print

Click Print Preview to see how the report will be printed. If you want to print the report on a video-out connected thermal printer, press Print on the printer itself when in Print Preview. Repeat this for each displayed page of the report.
Click Print for printing the report on a USB-connected thermal printer or on a PC printer. See chapter 5.4 about printer installation and chapter 21.2 about printing of reports on USB-connected thermal printers.

20.1.6 Delete

A measurement can be deleted by clicking Select on the measure. It is now highlighted in blue. Click Delete in the left bottom corner to delete the measurement from the report.

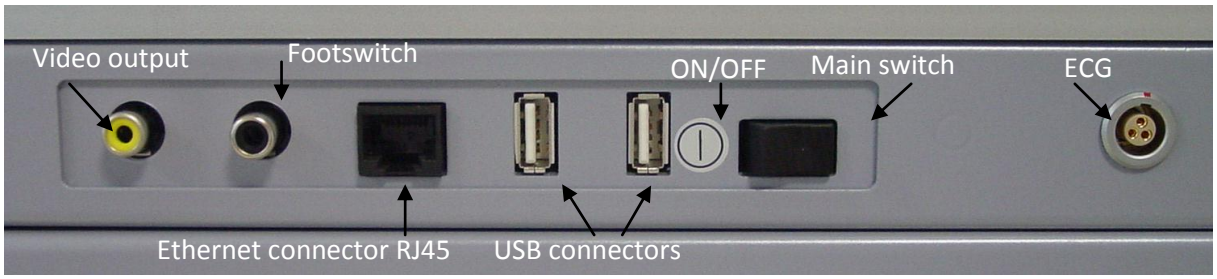
An on-going examination can be stopped by clicking Stop examination in the right bottom corner. This will close the report and close the patient file.

Exit of the Report by pressing the key Report or by pressing Clear.
After visualizing a previously made report, it is necessary to click Unselect in the patient page in order to close the patient file.

21. Connection of peripherals

The Imagyne equipment can be connected to several peripherals like:

- composite video printers
- USB peripherals (flash disk, hard disk, printer, etc…)
- another PC through an Ethernet link
- a specific ECG cable provided by ECM



ECM exclusively recommends the use of the following cables:
- specific ECG cable provided by ECM (ref. 31-1994)
- shielded USB cable, version USB 2.0, with 2 ferrites ZCAT2235-1030A
- shielded Ethernet cable, category 6, with 2 ferrites ZCAT2235-1030A
- shielded video cable, equipped with RCA connectors, and 2 ferrites ZCAT2235-1030A.

For using a footswitch, consult ECM.

To ensure the electrical safety of the equipment:

WARNING: All peripherals requiring a power input (printers, monitors etc.) must also use a medical isolation transformer or comply themselves with the electrical safety standard EN 60601-1. Otherwise, the patient electrical safety is no longer ensured.

WARNING: To ensure the electrical safety of the device, never touch any parts of an electrical non-medical device situated in the patient's environment at the same time as the patient.

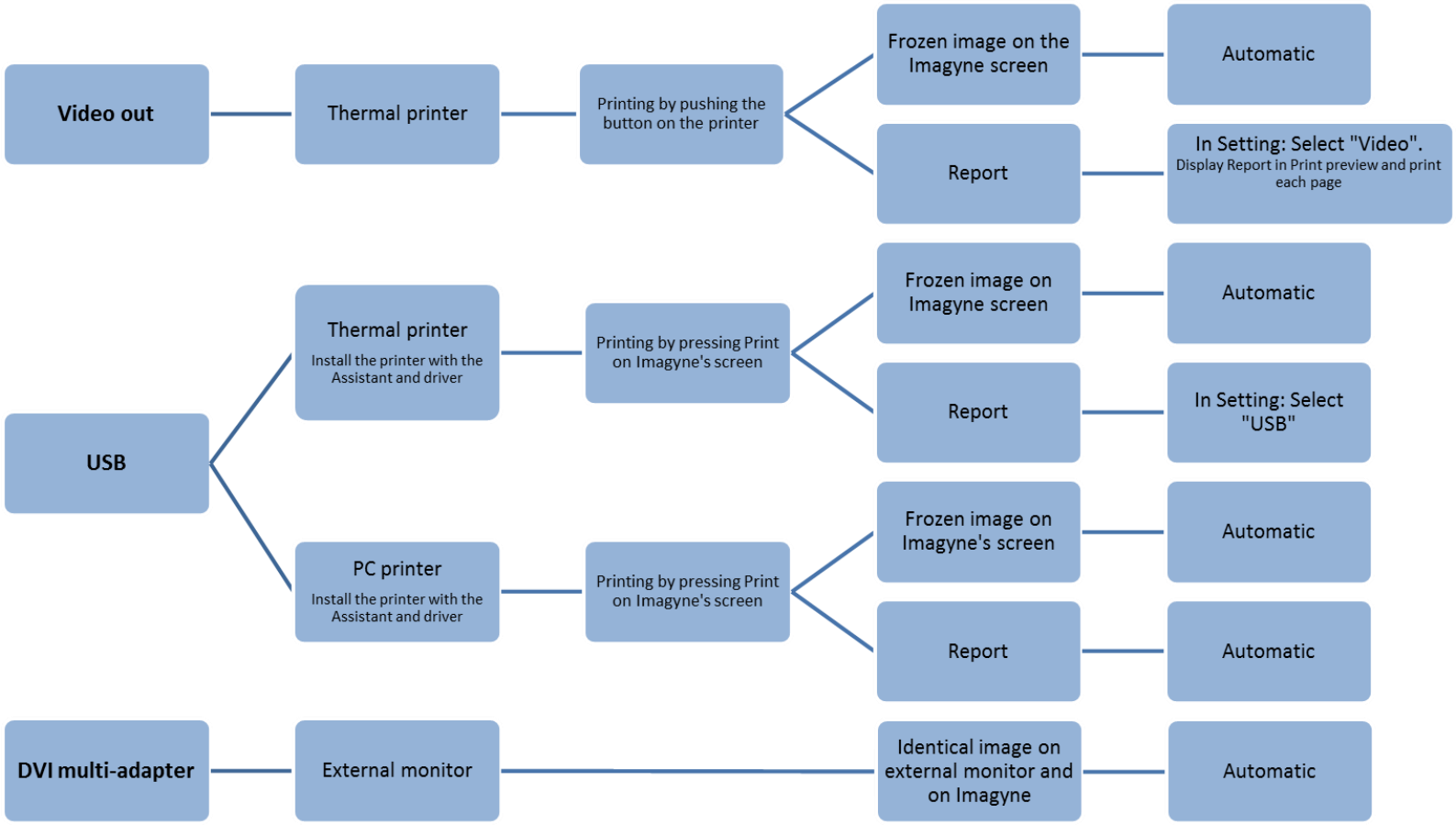
To ensure the electromagnetic compatibility of the equipment:

WARNING: The exclusive use of cables specified by ECM in this manual is mandatory to ensure the compliance of the Imagyne equipment with the electromagnetic compatibility standard EN 60601-1-2.

21.1 Management of out-puts: Video-out, USB, DVI

See the summarizing table below

Summarizing table:



21.2 Printing of reports on USB-connected thermal printers By USB-cable, for SONY UP-D897 printers

Adjustment of printing parameters

Install the USB-connected thermal printer: Press the key Setting on Imagyne and click on “Add printer”. Follow the instructions. If needed, insert the printer driver in the CD/DVD drive.

Press the key Setting on Imagyne. In the lower middle of the screen in the part concerning the printers, click on “Settings”.

The Sony UP-D897 printer should be the Default printer.
Click on “Properties”.
In the thumbnail “Layout”:
- Select “Enlarge to paper” with “Scale: 100 %”

NB: These parameters should only be adjusted in the thumbnail “Layout”. The parameter “Enlarge to paper” in the thumbnail “Settings” should not be selected.

Printing parameters for reports: Continued mode or manually

This adjustment is made in the Setting menu of Imagyne.
Press the key Setting on Imagyne. In the box named “Report Printing on thermal printer”, tick the box USB and select the wanted page delay:
- From 0 to 5 seconds between each page
- Manually. In this case a message occurs after each printed page, in order for the operator to cut each page. This parameter enables to print correctly on a thermal SONY UP-D897 printer.

Tick the corresponding box if you want to draw a frame border around each page.

NB: The result of printing on other thermal printers than SONY UP-D897 cannot be guaranteed.
Adjustment of the brightness on the printer itself can improve the readability, especially for the graphs in grey shades.
Adjustment of the sharpness on the printer itself can also improve the printing result.

If 2 USB-connected printers (thermal and PC) are installed on the same Imagyne device: Each time when shifting from one printer to another, it is recommended to check that the printing parameter adjustments of the thermal printer are correct like described above.

22. Cleaning and disinfection instructions

The protection of patients and staff from risks of infections is essential for all health care institutions. A treatment level corresponds to each risk level in order to obtain the needed level of microbiological quality.

22.1 Cleaning and disinfection of the device

The device has a low infection risk. This risk level corresponds to the use of so-called non-critical medical devices, which means devices which are not in direct contact with the patient.
The needed treatment for this type of medical device is a low-level disinfection, especially bactericidal.
The following disinfection solutions have been tested and their compatibility with the components of the device has been proved:

- Cidex
- Cidex plus
- Cidex OPA

It is strongly recommended to use one of these solutions in order to avoid any deterioration during the cleaning and disinfection procedure.

 WARNING: The use of any other disinfecting solution than the ones indicated above is dangerous as it may damage the components of the device. Check the list of specified agents carefully.

In order to ensure proper cleaning and disinfection, please follow the following procedure:

1. After every patient examination, or as often as necessary, wipe the keyboard and the external surfaces and casings of the device off to remove any traces of coupling gel.
2. Switch off and disconnect the device together with all connected peripherals.
3. Wipe the keyboard and the external surfaces and casings of the device with a clean soft cloth damped in a solution of mild soap and water.
4. Follow carefully instructions for low level disinfection indicated by the disinfectant manufacturer.
5. Remove any cleaning solution residue with a clean soft cloth damped in sterile water.
6. Air dry or dry with a soft, clean and dry cloth.

 WARNING: Before proceeding to any cleaning of the equipment, check that the system is switched off and all electrical connections and peripherals are unplugged.

 WARNING: Do not use alcohol, or other strong chemicals agents that may damage the casings of the equipment. Do not poor or spray liquids directly on the equipment.

22.2 Cleaning and disinfection of probes

22.2.1 External probes

External probes have a low infection risk. This risk level corresponds to the use of so-called non-critical medical devices, which means devices which are not in direct contact with the patient or which are in contact with intact skin.
The needed treatment for this type of medical device is a low-level disinfection, especially bactericidal.

Low level disinfection procedure:

The probes supplied with the Imagyne device must be used only on intact skin.
The following disinfection solutions have been tested and their compatibility with the components of the probes has been proved:

- Cidex
- Cidex plus
- Cidex OPA

It is strongly recommended to use one of these solutions in order to avoid any deterioration during the cleaning and disinfection procedure.

WARNING: The use of any other disinfecting solution than the ones indicated above is dangerous as it may damage the probe components. Check the list of specified agents carefully.

In order to ensure proper cleaning and disinfection, please follow the following procedure:

1. After every patient examination, wipe the ultrasound transmission gel off the probe.
2. Unplug the probe connector from the system.
3. Wipe the probe and cable with a clean soft cloth that has been damped in a solution of mild soap and water.
4. Follow carefully the low level disinfection instructions indicated by the disinfectant manufacturer.
5. Remove any cleaning solution residue with a soft clean cloth damped in sterile water.
6. Air dry or dry with a soft clean and dry cloth.

22.2.2 Endo-cavity probes

Endo-cavity probes have a medium infection risk. This risk level corresponds to the use of so-called semi-critical medical devices, which means devices which are in contact with mucus membranes or superficially injured skin.
The needed treatment for this type of medical device is a medium-level disinfection.
Low level disinfection procedure:

WARNING: The endo-cavity probe supplied with the Imagyne device must be used with a sterile cover over the probe casing which will be in contact with the mucus membranes. This cover is for single use only.

The following disinfection solutions have been tested and their compatibility with the components of the probes has been proved:

- Cidex
- Cidex plus
- Cidex OPA

It is strongly recommended to use one of these solutions in order to avoid any deterioration during the cleaning and disinfection procedure.

WARNING: The use of any other disinfecting solution than the ones indicated above is dangerous as it may damage the probe components. Check the list of specified agents carefully.

In order to ensure proper cleaning and disinfection for endo-cavity probes, please follow the following procedure:

1. After every patient examination, remove the single use sterile cover and throw it away.
2. Wipe the ultrasound transmission gel off the probe.
3. Unplug the probe connector from the system.
4. Wipe the probe and cable with a soft clean cloth that has been damped in a solution of mild soap and water.
5. Follow carefully the medium level disinfection instructions indicated by the disinfectant manufacturer.
6. Remove any cleaning solution residue with a soft clean cloth damped in sterile water.
7. Air dry or dry with a soft clean and dry cloth.

WARNING: The specified disinfectants have been tested for compatibility with the probe components, but not for their efficiency in producing the required level of disinfection. For information about the efficiency of each solution, please consult the respective disinfectant manufacturer.

WARNING: Do not soak the probe in a solution any longer than the disinfection agent manufacturer's recommendation. Follow the disinfection agent manufacturer's recommendations for disinfection.

WARNING: Do not rub the probe with an abrasive sponge. Use a soft cloth or towel.

WARNING: The following procedures are known to damage transducers. They can damage both the electrical safety features and the acoustic performance of the probes.

Do not use the following procedures:

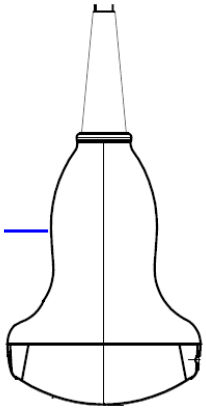
- Gas sterilization.
- Ultraviolet sterilization
- Dry heat sterilization
- Autoclaving
- Soaking a transducer in a chlorine bleach solution.

22.3 Submerging limits

WARNING: During cleaning and disinfection of probes, take care of never exceeding the submerging limits indicated on the following figures.

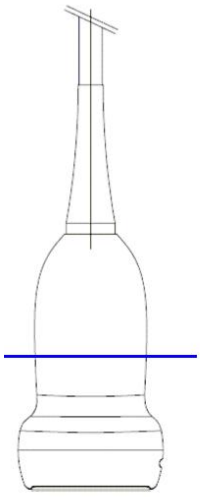
Probe C360V/C360A/C360R:

Submerging limit in a fluid



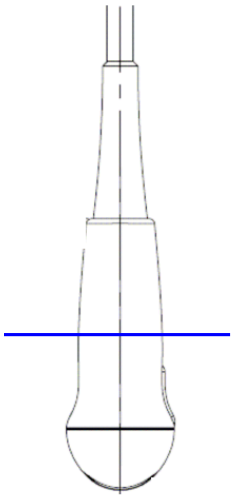
Probe L738P:

Submerging limit in a fluid



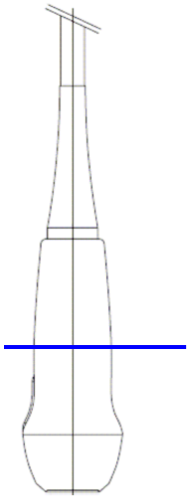
Probe C614P:

Submerging limit in a fluid



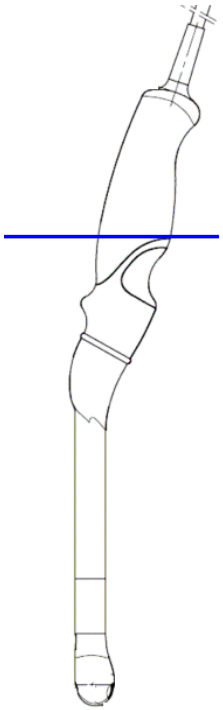
Probe P320R:

Submerging limit in a fluid

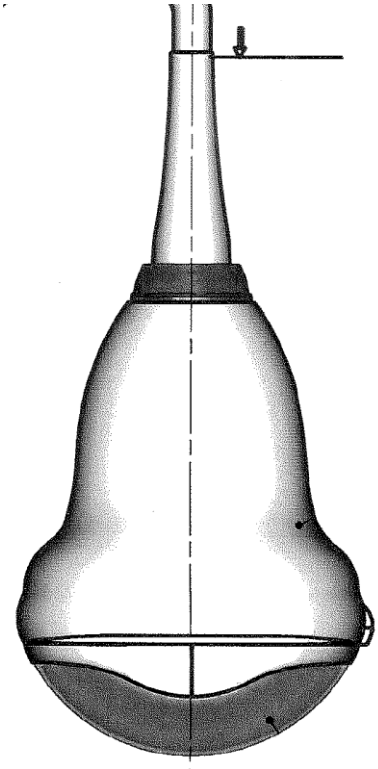


Probe E610A/E610R:

Submerging limit in a fluid



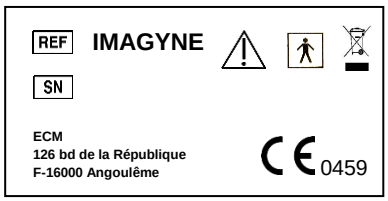
Probe 4DC540V:



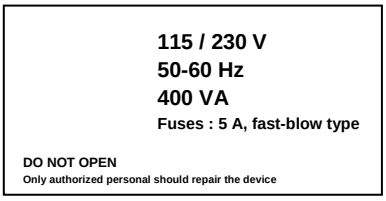
Submerging limit in a fluid

23. Labeling of the device

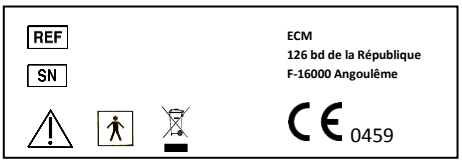
Reference label for Imagyne with indication of serial number:



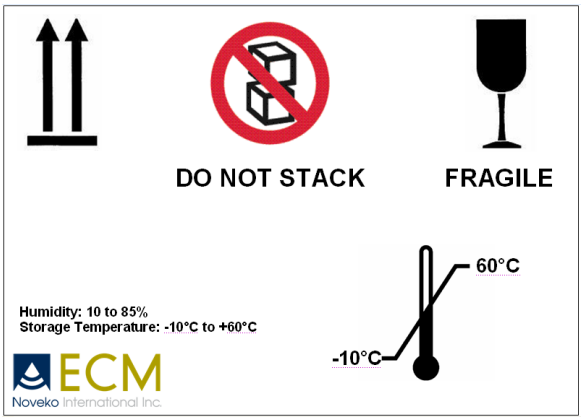
Label for power supply and fuse cutout:



Probe label with reference and serial number:



Protection packaging label with temperature and humidity precautions for transport and stocking:



24. Annex 1: Measure accuracy

Measurement	Range	*Accuracy*
Distance and ellipse perimeter	Up to 30 cm	< ± 5% ou < 1mm, below 2 cm See note 2
Trace perimeter	Up to 100 cm	< ± 5% ou < 1mm, below 2 cm
Surface	Up to 1000 cm^2	< ± 10% ou < 40 mm^2, below 4 cm^2
Volume	Up to 3000 cm^3	< ± 16% ou < 1.3 cm^3, below 8 cm^3
Time	Up to 30 sec	< ± 5% of full scale
Speed	Up to 10 m/s	N/A : see note 1
Cardiac beat frequency	0 <= value < 600 BPM	< ± 5%

Note 1: The PW (Pulsed Wave Doppler) speed information provided by the equipment is only indicative. The equipment is performing an accurate measurement of the Doppler frequency shift, but speed indication is obtained by a computation based on the angle correction information which is manually entered by the user. As an indication only, the speed information would be accurate at ± 5% of the full scale speed in the hypothetical case where there would be absolutely no uncertainty on the angle correction estimation.

Note 2: The IMT measurement is only indicative. The measure accuracy shown in the table above is not applicable.

25. Annex II: Electromagnetical compatibility

TABLE 1

<table>
<tr><th colspan="3">Guidance and manufacturer's declaration – electromagnetic emissions</th></tr>
<tr><td colspan="3">The Imagyne equipment is intended for use in the electromagnetic environment specified below. The customer or the user of the Imagyne equipment should assure that it used in such an environment.</td></tr>
<tr><th>Emission tests</th><th>Compliance</th><th>Electromagnetic environment – guidance</th></tr>
<tr><td>RF Emissions
CISPR 11</td><td>Group 1</td><td>The Imagyne equipment uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.</td></tr>
<tr><td>RF Emissions
CISPR 11</td><td>Class A</td><td rowspan="3">The Imagyne equipment is suitable for use in all establishments other than domestic and can be used in domestic establishments and those directly connected to the public low-voltage power supply network under the condition of the following warning :

Warning: This equipment/system is intended to be used by health professionals. This equipment/system can cause radioelectric perturbations or it can affect the behaviour of a nearby electronic equipment. It may be necessary to take attenuation measures, like re-orienting or relocating the Imagyne equipment or shielding the location.</td></tr>
<tr><td>Harmonic emissions
CEI 61000-3-2</td><td>Class A</td></tr>
<tr><td>Voltage fluctuations/
Flicker emissions
CEI 61000-3-3</td><td>Complies</td></tr>
<tr><td colspan="3">NOTE 1: The use of cables or accessories different from those specified by ECM may have as a consequence an increase of emission or a decrease of immunity of the Imagyne equipment.</td></tr>
</table>

TABLE 2

Guidance and manufacturer's declaration –electromagnetic immunity			
The Imagyne equipment is intended for use in the electromagnetic environment specified below. The customer or the user of the Imagyne equipment should assure that it used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environnement - guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % *U*T (>95 % dip de *U*T) for 0,5 cycle 40 % *U*T (60 % dip de *U*T) for 5 cycles 70 % *U*T (30 % dip de *U*T) for 25 cycles <5 % *U*T (>95 % dip de *U*T) for 5 s	<5 % *U*T (>95 % dip de *U*T) for 0,5 cycle 40 % *U*T (60 % dip de *U*T) for 5 cycles 70 % *U*T (30 % dip de *U*T) for 25 cycles <5 % *U*T (>95 % dip de *U*T) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Imagyne equipment requires continued operation during power mains interruptions, it is recommended for the Imagyne equipment to be powered from an uninterruptible power supply.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE 1: *U*T is the a.c. mains voltage prior to application of the test level. NOTE 2: The use of cables or accessories different from those specified by ECM may have as a consequence an increase of emission or a decrease of immunity of the Imagyne equipment. NOTE 3: The essential performance of the equipment considered for the compliance to the standard is defined as the correct visualization on the screen of an area of interest centered at 5 cm's depth with the C360 probe using default settings on a ATS model 539 phantom. The ultrasound image includes both hypoechogenic and hyperechogenic targets that should stay visible without any possible confusion.			

TABLE 4

Guidance and manufacturer's declaration –electromagnetic immunity			
The Imagyne equipment is intended for use in the electromagnetic environment specified below. The customer or the user of the Imagyne equipment should assure that it used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environnement - guidance**
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 V/m 80 MHz to 2,5 GHz	3 Vrms 3 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the Imagyne equipment, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** $d = 1{,}2\sqrt{P}$ 150 kHz to 80 MHz $d = 1{,}2\sqrt{P}$ 80 MHz to 800 MHz $d = 2{,}3\sqrt{P}$ 800 MHz to 2,5 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey[a], should be less than the compliance level in each frequency range.[b] Interference may occur in the vicinity of equipment marked with the following symbol : 
NOTE 1: Àt 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people. NOTE 3: The use of cables or accessories different from those specified by ECM may have as a consequence an increase of emission or a decrease of immunity of the Imagyne equipment.			
a Field strengths from fixed transmitters, such as base station for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Imagyne equipment is used exceeds the applicable RF compliance level above, the Imagyne equipment should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Imagyne equipment. b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.			

TABLE 6

Recommended separation distances between portable and mobile RF communications equipment and the Imagyne equipment			
The Imagyne equipment is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or user of the Imagyne equipment can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Imagyne equipment as recommended below, according to the maximum output power of the communication equipment.			
Rated maximum output power of transmitter W	**Separation distance according to frequency of transmitter** m		
	150 kHz to 80 MHz $d = 1{,}2\sqrt{P}$	**80 MHz to 800 MHz** $d = 1{,}2\sqrt{P}$	**800 MHz to 2,5 GHz** $d = 2{,}3\sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people. NOTE 3: The use of cables or accessories different from those specified by ECM may have as a consequence an increase of emission or a decrease of immunity of the Imagyne equipment.			

26. Annex III: Acoustic power

Probe model : C360V **Mode B (mode 2D)**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,90	0,12				(a)
Associated acoustic parameters	p_{ra}	MPa	1,58					
	P	mW		8,6				(a)
	Min[$P_{\square}(z_s)$,$I_{ta,\square}(z_s)$]							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z at max $I_{pi,\square}$	cm	6					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	3,05	3,05				(a)
	Dim A_{aprt}	X		21				(a)
		Y		13				(a)
Other information	t_d	µs	0,38					
	prr	Hz	32					
	p_r at max I_{pi}		2,97					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,\square}$ at max MI (W/cm²)		117					

(a) This probe is not appropriate for trans-cranial or cephalic application on a new born baby.

Probe model: C360V **Mode CFM**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,99	0,30				(a)
Associated acoustic parameters	p_{ra}	MPa	1,56					
	P	mW		25				(a)
	Min[$P_{\square}(z_s)$,$I_{ta,\square}(z_s)$]							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z at max $I_{pi,\square}$	cm	6					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	2,49	2,49-3,05				(a)
	Dim A_{aprt}	X		21				(a)
		Y		13				(a)
Other information	t_d	µs	1,02					
	prr	Hz	119					
	p_r at max I_{pi}		2,63					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,\square}$ at max MI (W/cm²)		76					

Probe model: C360V **Mode PW**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,71			0,65	2,14	(a)
Associated acoustic parameters	p_{ra}	MPa	1,13					
	P	mW					88	(a)
	$Min[P_{?}(z_s), I_{ta,?}(z_s)]$					54		
	z_s	cm				2,8		
	z_{bp}	cm				2,8		
	z_b	cm				6	6	
	z at max $I_{pi,?}$	cm	6					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	2,54			2,54	2,54	(a)
	Dim A_{aprt}	X				21	21	(a)
		Y				13	13	(a)
Other information	t_d	µs	2,18					
	prr	Hz	5120					
	p_r at max I_{pi}		1,91					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,?}$ at max MI (W/cm²)		33					

Probe model: C360A **Mode B**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					Aaprt ≤ 1 cm²	Aaprt> 1 cm²		
Maximum Index Value			0,95	0,22				(a)
Associated acoustic parameters	pra	MPa	1,80					
	P	mW		13				(a)
	Min[P□(zs),Ita,□(zs)]							
	zs	cm						
	zbp	cm						
	zb	cm						
	z at max Ipi, □	cm	8					
	deq(zb)	cm						
	fawf	MHz	3,54	3,54				(a)
	Dim Aaprt	X		21				(a)
		Y		11				(a)
Other information	td	µs	0,38					
	prr	Hz	32					
	pr at max Ipi		4,78					
	deq at max Ipi	cm						
	Ipa, □ at max MI (W/cm²)		106					

(a) This probe is not appropriate for trans-cranial or cephalic application on a newborn baby

Probe model: C360A **Mode CFM**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					Aaprt ≤ 1 cm²	Aaprt> 1 cm²		
Maximum Index Value			1,15	0,40				(a)
Associated acoustic parameters	pra	MPa	2,16					
	P	mW		24				(a)
	Min[P□(zs),Ita,□(zs)]							
	zs	cm						
	zbp	cm						
	zb	cm						
	z at max Ipi, □	cm	8					
	deq(zb)	cm						
	fawf	MHz	3,54	3,41-3,54				(a)
	Dim Aaprt	X		21				(a)
		Y		11				(a)
Other information	td	µs	0,38					
	prr	Hz	8					
	pr at max Ipi		5,73					
	deq at max Ipi	cm						
	Ipa, □ at max MI (W/cm²)		154					

Probe model: C360A **Mode PW**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					Aaprt ≤ 1 cm²	Aaprt> 1 cm²		
Maximum Index Value			0,45			0,61	1,14	(a)
Associated acoustic parameters	pra	MPa	0,80					
	P	mW					73	(a)
	Min[P(zs),Ita,(zs)]					41		
	zs	cm				2,6		
	zbp	cm				2,6		
	zb	cm				6,5	6,5	
	z at max Ipi,	cm	8					
	deq(zb)	cm						
	fawf	MHz	3,11			3,11	3,11	(a)
	Dim Aaprt	X				21	21	(a)
		Y				11	11	(a)
Other information	td	µs	1,77					
	prr	Hz	5120					
	pr at max Ipi		1,89					
	deq at max Ipi	cm						
	Ipa, at max MI (W/cm²)		20					

Probe model: C360R **Mode B**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					Aaprt ≤ 1 cm²	Aaprt> 1 cm²		
Maximum Index Value			0,95	0,22				(a)
Associated acoustic parameters	pra	MPa	1,80					
	P	mW		13				(a)
	Min[P(zs),Ita,(zs)]							
	zs	cm						
	zbp	cm						
	zb	cm						
	z at max Ipi,	cm	8					
	deq(zb)	cm						
	fawf	MHz	3,54	3,54				(a)
	Dim Aaprt	X		21				(a)
		Y		11				(a)
Other information	td	µs	0,38					
	prr	Hz	32					
	pr at max Ipi		4,78					
	deq at max Ipi	cm						
	Ipa, at max MI (W/cm²)		106					

(a) This probe is not appropriate for trans-cranial or cephalic application on a newborn baby

Probe model: C360R **Mode CFM**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					Aaprt ≤ 1 cm²	Aaprt> 1 cm²		
Maximum Index Value			1,15	0,40				(a)
Associated acoustic parameters	pra	MPa	2,16					
	P	mW		24				(a)
	Min[P(zs),Ita,(zs)]							
	zs	cm						
	zbp	cm						
	zb	cm						
	z at max Ipi,	cm	8					
	deq(zb)	cm						
	fawf	MHz	3,54	3,41-3,54				(a)
	Dim Aaprt	X		21				(a)
		Y		11				(a)
Other information	td	µs	0,38					
	prr	Hz	8					
	pr at max Ipi		5,73					
	deq at max Ipi	cm						
	Ipa, at max MI (W/cm²)		154					

Probe model: C360R **Mode PW**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					Aaprt ≤ 1 cm²	Aaprt> 1 cm²		
Maximum Index Value			0,45			0,61	1,14	(a)
Associated acoustic parameters	pra	MPa	0,80					
	P	mW					73	(a)
	Min[P□(zs),Ita,□(zs)]					41		
	zs	cm				2,6		
	zbp	cm				2,6		
	zb	cm				6,5	6,5	
	z at max Ipi, □	cm	8					
	deq(zb)	cm						
	fawf	MHz	3,11			3,11	3,11	(a)
	Dim Aaprt	X				21	21	(a)
		Y				11	11	(a)
Other information	td	µs	1,77					
	prr	Hz	5120					
	pr at max Ipi		1,89					
	deq at max Ipi	cm						
	Ipa, □ at max MI (W/cm²)		20					

Probe model: L738P **Mode B (mode 2D)**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			1,06	0,51				(a)
Associated acoustic parameters	p_{ra}	MPa	3,0					
	P	mW		13				(a)
	$Min[P_{?}(z_s), I_{ta,?}(z_s)]$							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z at max $I_{pi,?}$	cm	3					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	7,96	7,96				(a)
	Dim A_{aprt}	X		0,9				(a)
		Y		4,3				(a)
Other information	t_d	µs	0,16					
	prr	Hz	64					
	p_r at max I_{pi}		6,83					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,?}$ at max MI (W/cm²)		371					

Probe model: L738P **Mode CFM**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			1,06	1,19				(a)
Associated acoustic parameters	p_{ra}	MPa	3,0					
	P	mW		31				(a)
	$Min[P_{?}(z_s), I_{ta,?}(z_s)]$							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z at max $I_{pi,?}$	cm	3					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	7,96	7,97-8,06				(a)
	Dim A_{aprt}	X		0,9				(a)
		Y		4,3				(a)
Other information	t_d	µs	0,16					
	prr	Hz	11					
	p_r at max I_{pi}		6,8					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,?}$ at max MI (W/cm²)		371					

Probe model: L738P **Mode PW**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1\ cm^2$	$A_{aprt} > 1\ cm^2$		
Maximum Index Value			0,73		2,29		3,51	(a)
Associated acoustic parameters	p_{ra}	MPa	1,82					
	P	mW			78		78	(a)
	$Min[P_{?}(z_s),I_{ta,?}(z_s)]$							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm					1	
	z at max $I_{pi,?}$	cm	3					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	6,16		6,16		6,16	(a)
	Dim A_{aprt}	X			0,9		0,9	(a)
		Y			4,3		4,3	(a)
Other information	t_d	µs	1,84					
	prr	Hz	5120					
	p_r at max I_{pi}		3,44					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,?}$ at max MI (W/cm²)		110					

Probe model: E610A **Mode B**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,87	0,34				(a)
Associated acoustic parameters	p_{ra}	MPa	2,19					
	P	mW		12				(a)
	$Min[P_{?}(z_s), I_{ta,?}(z_s)]$							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z au max $I_{pi,?}$	cm	3					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	6,29	6,29				(a)
	Dim A_{aprt}	X		0,92				(a)
		Y		0,58				(a)
Other information	t_d	µs	0,27					
	prr	Hz	64					
	p_r at max I_{pi}		4,20					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,?}$ at max MI (W/cm²)		228					

Probe model: E610A **Mode CFM**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,87	0,38				(a)
Associated acoustic parameters	p_{ra}	MPa	2,20					
	P	mW		12,8				(a)
	$Min[P_{?}(z_s), I_{ta,?}(z_s)]$							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z at max $I_{pi,?}$	cm	3					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	6,29	6,16- 6,29				(a)
	Dim A_{aprt}	X		0,92				(a)
		Y		0,58				(a)
Other information	t_d	µs	0,27					
	prr	Hz	18,9					
	p_r at max I_{pi}		4,20					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,?}$ at max MI (W/cm²)		230					

Probe model: E610A **Mode PW**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,46		0,64		1,20	(a)
Associated acoustic parameters	p_{ra}	MPa	1,15					
	P	mW			22		22	(a)
	Min[$P_{[illegible]}(z_s)$,$I_{ta,[illegible]}(z_s)$]							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm					2,5	
	z at max $I_{pi,[illegible]}$	cm	3					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	6,16		6,16		6,16	(a)
	Dim A_{aprt}	X			0,92		0,92	(a)
		Y			0,58		0,58	(a)
Other information	t_d	µs	1,84					
	prr	Hz	5120					
	p_r at max I_{pi}		2,18					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,[illegible]}$ at max MI (W/cm²)		40					

Probe model: E610R **Mode B**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,87	0,34				(a)
Associated acoustic parameters	p_{ra}	MPa	2,19					
	P	mW		12				(a)
	$Min[P_{?}(z_s), I_{ta,?}(z_s)]$							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z au max $I_{pi,?}$	cm	3					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	6,29	6,29				(a)
	Dim A_{aprt}	X		0,92				(a)
		Y		0,58				(a)
Other information	t_d	µs	0,27					
	prr	Hz	64					
	p_r at max I_{pi}		4,20					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,?}$ at max MI (W/cm²)		228					

Probe model: E610R **Mode CFM**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,87	0,38				(a)
Associated acoustic parameters	p_{ra}	MPa	2,20					
	P	mW		12,8				(a)
	$Min[P_{?}(z_s), I_{ta,?}(z_s)]$							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z at max $I_{pi,?}$	cm	3					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	6,29	6,16- 6,29				(a)
	Dim A_{aprt}	X		0,92				(a)
		Y		0,58				(a)
Other information	t_d	µs	0,27					
	prr	Hz	18,9					
	p_r at max I_{pi}		4,20					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,?}$ at max MI (W/cm²)		230					

Probe model: E610R **Mode PW**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,46		0,64		1,20	(a)
Associated acoustic parameters	p_{ra}	MPa	1,15					
	P	mW			22		22	(a)
	Min[$P_{[illegible]}(z_s)$,$I_{ta,[illegible]}(z_s)$]							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm					2,5	
	z at max $I_{pi,[illegible]}$	cm	3					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	6,16		6,16		6,16	(a)
	Dim A_{aprt}	X			0,92		0,92	(a)
		Y			0,58		0,58	(a)
Other information	t_d	µs	1,84					
	prr	Hz	5120					
	p_r at max I_{pi}		2,18					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,[illegible]}$ at max MI (W/cm²)		40					

Probe model: C614P **Mode B (mode 2D)**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,52	0,20				(a)
Associated acoustic parameters	p_{ra}	MPa	1,28					
	P	mW		7				(a)
	Min[$P_{\square}(z_s)$,$I_{ta,\square}(z_s)$]							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z at max $I_{pi,\square}$	cm	3					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	6,12	6,13				(a)
	Dim A_{aprt}	X		1,06				(a)
		Y		0,55				(a)
Other information	t_d	µs	0,200					
	prr	Hz	64					
	p_r at max I_{pi}		2,42					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,\square}$ at max MI (W/cm²)		56					

Probe model: C614P **Mode CFM**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,52	0,45				(a)
Associated acoustic parameters	p_{ra}	MPa	1,28					
	P	mW		16				(a)
	Min[$P_{\square}(z_s)$,$I_{ta,\square}(z_s)$]							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z at max $I_{pi,\square}$	cm	3					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	6,13	6,10-6,13				(a)
	Dim A_{aprt}	X		1,06				(a)
		Y		0,55				(a)
Other information	t_d	µs	0,200					
	prr	Hz	12,4					
	p_r at max I_{pi}		2,42					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,\square}$ at max MI (W/cm²)		56					

Probe model: C614P **Mode PW**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1\ cm^2$	$A_{aprt} > 1\ cm^2$		
Maximum Index Value			0,32		0,79		0,93	(a)
Associated acoustic parameters	p_{ra}	MPa	0,79					
	P	mW			27		27	(a)
	Min[$P_{?}(z_s)$,$I_{ta,?}(z_s)$]							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm					3	
	z at max $I_{pi,?}$	cm	3					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	6,16		6,16		6,16	(a)
	Dim A_{aprt}	X			1,06		1,06	(a)
		Y			0,55		0,55	(a)
Other information	t_d	µs	1,85					
	prr	Hz	5120					
	p_r at max I_{pi}		1,49					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,?}$ at max MI (W/cm²)		17					

Probe model: P320R **Mode B (mode 2D)**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			1,70	0,42				
Associated acoustic parameters	p_{ra}	MPa	2,49					
	P	mW		41				
	Min[$P_{?}(z_s)$,$I_{ta,?}(z_s)$]							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z at max $I_{pi,?}$	cm	6					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	2,14	2,14				
	Dim A_{aprt}	X		1,63				
		Y		1,64				
Other information	t_d	µs	0,474					
	prr	Hz	32					
	p_r at max I_{pi}		3,87					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,?}$ at max MI (W/cm²)		188					

Probe model: P320R **Mode CFM**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			1,70	1,42				
Associated acoustic parameters	p_{ra}	MPa	2,49					
	P	mW		122				
	Min[$P_{?}(z_s)$,$I_{ta,?}(z_s)$]							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z at max $I_{pi,?}$	cm	6					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	2,14	2,14-2,5				
	Dim A_{aprt}	X		1,63				
		Y		1,64				
Other information	t_d	µs	0,474					
	prr	Hz	16					
	p_r at max I_{pi}		3,87					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,?}$ at max MI (W/cm²)		188					

Probe model: P320R **Mode PW**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,55			0,63	2,22	
Associated acoustic parameters	p_{ra}	MPa	0,79					
	P	mW					98	
	Min[$p_{?}(z_s)$,$I_{ta,?}(z_s)$]					64		
	z_s	cm				3		
	z_{bp}	cm				2,8		
	z_b	cm				5	5	
	z at max $I_{pi,?}$	cm	6					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	2,07			2,07	2,07	
	Dim A_{aprt}	X				1,63	1,63	
		Y				1,64	1,64	
Other information	t_d	µs	2,67					
	prr	Hz	5120					
	p_r at max I_{pi}		1,22					
	d_{eq} at max I_{pi}	cm						
	$I_{pa,?}$ at max MI (W/cm²)		21					

Probe model: 4DC540V **Mode B**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			1,08	0,28				(a)
Associated acoustic parameters	p_{ra}	MPa	2,24					
	P	mW		13,7				(a)
	$Min[P_{\alpha}(z_s), I_{ta,\alpha}(z_s)]$							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z au max $I_{pi,\alpha}$	cm	5					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	4,27	4,275				(a)
	Dim A_{aprt}	X		16				(a)
		Y		12				(a)
Other information	t_d	µs	0,31					
	prr	Hz	32					
	p_r au max de I_{pi}		4,68					
	d_{eq} au max I_{pi}	cm						
	$I_{pa,\alpha}$ au max MI (W/cm²)		317					

(a) This probe is not appropriate for trans-cranial or cephalic application on a new born baby.

Probe model: 4DC540V **Mode CFM**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			1,09	0,53				(a)
Associated acoustic parameters	p_{ra}	MPa	2,25					
	P	mW		31				(a)
	$Min[P_{\alpha}(z_s), I_{ta,\alpha}(z_s)]$							
	z_s	cm						
	z_{bp}	cm						
	z_b	cm						
	z au max $I_{pi,\alpha}$	cm	5					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	3,51	3,51				(a)
	Dim A_{aprt}	X		16				(a)
		Y		12				(a)
Other information	t_d	µs	0,73					
	prr	Hz	165					
	p_r au max de I_{pi}		3,28					
	d_{eq} au max I_{pi}	cm						
	$I_{pa,\alpha}$ au max MI (W/cm²)		135					

Probe model: 4DC540V **Mode PW**

Index label			MI	TIS			TIB	TIC
				Scan	Non scan		Non scan	
					$A_{aprt} \leq 1$ cm²	$A_{aprt} > 1$ cm²		
Maximum Index Value			0,53			1,91	1,21	(a)
Associated acoustic parameters	p_{ra}	MPa	0,94					
	P	mW					33,70	(a)
	$Min[P_{\alpha}(z_s), I_{ta,\alpha}(z_s)]$					20		
	z_s	cm				2,3		
	z_{bp}	cm				2,3		
	z_b	cm				4,5	4,5	
	z au max $I_{pi, \alpha}$	cm	5					
	$d_{eq}(z_b)$	cm						
	f_{awf}	MHz	3,19			3,19	3,19	(a)
	Dim A_{aprt}	X				16	16	(a)
		Y				12	12	(a)
Other information	t_d	µs	1,79					
	prr	Hz	5120					
	p_r au max de I_{pi}		1,63					
	d_{eq} au max I_{pi}	cm						
	$I_{pa, \alpha}$ au max MI (W/cm²)		29					

27. Annex IV: Tables, references and calculations

27.1 List and bibliographic references of obstetrical tables

Measures	Abbreviation	Table type	Mode	Author	Bibliographic reference
Abdominal Circumference	AC	FG	B-CFM	Chitty (drvd)	Chitty, L,S,, Altman, D,G, "Charts of Fetal Size: 3, Abdominal Measurements" British Journal of Obstetrics & Gynaecology, jan, 1994, vol, 101, P, 125-131
	AC	FG	B-CFM	Chitty (Pltd)	Chitty, L,S,, Altman, D,G, "Charts of Fetal Size: 3, Abdominal Measurements" British Journal of Obstetrics & Gynaecology, jan, 1994, vol, 101, P, 125-131
	AC	FG	B-CFM	CFEF	Biometry 2000, Fetal growth charts by the Collège Français d'Echographie Fœtale(CFEF; the "French College of Fetal Ultrasonography") and INSERM U 155, Gynecol Obstet Fertil 2000 Jun; 28 (6): 435-45
	AC	FG	B-CFM	Hadlock	Hadlock FP, Deter RL, Harrist RB, Park SK: "Estimating fetal age: Computer-assisted analysis of multiple fetal growth parameters" Radiology 1984; 152: 497-502,
	AC	FG	B-CFM	Jeanty	Hansmann M, Hackelöer B, Staudach A, "Ultrasound Diagnosis in Obstetrics and Gynecology" Springer Verlag, 1990, (ISBN 0-387-15348-9 Springer-Verlag New-York) ; P 179
	AC	FG	B-CFM	Tokyo	Norio Shinozuka, Haruo Masuda, Hideroni Kagawa, Yuji Taketani Standard Values of Ultrasonographic Fetal Biometry Jpn Med Ultrasonics Vol, 23 No, 12(1996) P 877-888
Anteroposterior Abdominal Diameter	APAD	FG	B-CFM	Merz	Merz E : "Ultrasound in Gynecology and Obstetrics" Stuttgart, New York, Thieme Medical Publishers, Inc, 1991; P, 312
Anteroposterior trunk Diameter by Transverse Trunk Diameter APTD*TTD	AXT	FG	B-CFM	Tokyo	Norio Shinozuka, Haruo Masuda, Hidenori Kagawa, Yuji Taketani Standard Values of Ultrasonographic Fetal Biometry Jpn Med Ultrasonics Vol, 23 N0, 12(1996) P 877-888
Biparietal Diameter	BPD	FG	B-CFM	Chitty (o-o)	Chitty, L,S,, Altman, D,G, "Charts of Fetal Size: 2, Head Measurements" British Journal of Obstetrics & Gynaecology, jan, 1994, vol, 101, P, 35-43
	BPD	FG	B-CFM	CFEF	Biometry 2000, Fetal growth charts by the Collège Français d'Echographie Fœtale(CFEF; the "French College of Fetal Ultrasonography") and INSERM U 155, Gynecol Obstet Fertil 2000 Jun; 28 (6): 435-45
	BPD	FG	B-CFM	Hadlock	Hadlock FP, Deter RL, Harrist RB, Park SK: "Estimating fetal age: Computer-assisted analysis of multiple fetal growth parameters" Radiology 1984; 152: 497-502,
	BPD	FG	B-CFM	Hansmann	Hansmann M, Hackelöer B, Staudach A, "Ultrasound Diagnosis in Obstetrics and Gynecology" Springer Verlag, 1990, (ISBN 0-387-15348-9 Springer-Verlag New-York) ; P 440-441
	BPD	FG	B-CFM	Osaka	Mineo Aoki, Motohiro Yamada Evaluation of fetal growth Obstetrics and gynecological treatment Vol, 47 N0, 5 (1983: 11)
	BPD	FG	B-CFM	Tokyo	Norio Shinozuka, Haruo Masuda, Hideroni Kagawa, Yuji Taketani Standard Values of Ultrasonographic Fetal Biometry Jpn Med Ultrasonics Vol, 23 No, 12(1996) P 877-888
Clavicle Length	Clavicle	FG	B-CFM	Yarkoni	Yarkoni S, Schmidt W, Jeanty P, et al "Clavicular measurement: A new biometric parameter for fetal evaluation" J Ultrasound Med, 4: 467-470,1985,
Crown-rump Length	CRL	FG	B-CFM	Hadlock	Hadlock FP, Shash YP, Kanon DJ, Lindsey JV: "Fetal Crown-rump length: Reevaluation of relation to menstrual age (5-18 weeks) with high-resolution real-time US", Radiology 1992; 182: 501-505

	CRL	FG	B-CFM	Hansmann	Hansmann M, Hackelöer B, Staudach A, "Ultrasound Diagnosis in Obstetrics and Gynecology" Springer Verlag, 1990, (ISBN 0-387-15348-9 Springer-Verlag New-York) ; P 438
	CRL	FG	B-CFM	Osaka	Mineo Aoki, Motohiro Yamada Evaluation of fetal growth Obstetrics and gynecological treatment Vol, 47 N0, 5(1983:11)
	CRL	FG	B-CFM	Rempen	Rempen A: "Biometris in der fruehgravitaet (I, trimenon)" der Frauernarzt 32/1991: 425-430
	CRL	FG	B-CFM	Robinson	H,P, Robinson, Honory Senior Registrar "A critical evaluation of sonar crown-rump length measurements " British Journal of Obstetrics and Gyneacology September 1975 82: 702-710
	CRL	FG	B-CFM	Tokyo	Takashi Okai Department of Obstetrics and Gynecology, Faculty of Medicine, University of Tokyo Studies on Fetal Growth and Functional Developments Official Journal of the Japan Society of Obstetrics and Gynecology ACTA OBST GYNEC JPN Vol, 38, No 8, pp, 1209-1217, 1986
Femur Length	FL	FG	B-CFM	Chitty	Chitty, L,S,, Altman, D,G, "Charts of Fetal Size: 4, Femur Length" British Journal of Obstetrics & Gynaecology, jan, 1994, vol, 101, P, 132-135
	FL	FG	B-CFM	CFEF	Biometry 2000, Fetal growth charts by the Collège Français d'Echographie Fœtale(CFEF; the "French College of Fetal Ultrasonography") and INSERM U 155, Gynecol Obstet Fertil 2000 Jun; 28 (6): 435-45
	FL	FG	B-CFM	Hadlock	Hadlock FP, Deter RL, Harrist RB, Park SK: "Estimating fetal age: Computer-assisted analysis of multiple fetal growth parameters" Radiology 1984; 152: 497-502,
	FL	FG	B-CFM	Hansmann	Hansmann M, Hackelöer B, Staudach A, "Ultrasound Diagnosis in Obstetrics and Gynecology" Springer Verlag, 1990, (ISBN 0-387-15348-9 Springer-Verlag New-York) ; P 431
	FL	FG	B-CFM	Osaka	Mineo Aoki, Motohiro Yamada Evaluation of fetal growth Obstetrics and gynecological treatment Vol, 47 N0, 5(1983:11)
	FL	FG	B-CFM	Tokyo	Norio Shinozuka, Haruo Masuda, Hideroni Kagawa, Yuji Taketani Standard Values of Ultrasonographic Fetal Biometry Jpn Med Ultrasonics Vol, 23 No, 12(1996) P 877-888
Fetal trunk cross-sectional area	FTA	FG	B-CFM	Osaka	Mineo Aoki, Motohiro Yamada Evaluation of fetal growth Obstetrics and gynecological treatment Vol, 47 N0, 5(1983:11)
Gestational sac	GS	FG	B-CFM	Rempen	Rempen A: "Biometris in der fruehgravitaet (I, trimenon)" der Frauernarzt 32/1991: 425-430
	GS	FG	B-CFM	Hansmann	Hansmann M, Hackelöer B, Staudach A, "Ultrasound Diagnosis in Obstetrics and Gynecology" Springer Verlag, 1990, (ISBN 0-387-15348-9 Springer-Verlag New-York) ; P 36
	GS	FG	B-CFM	Tokyo	Takashi Okai Department of Obstetrics and Gynecology, Faculty of Medicine, University of Tokyo Studies on Fetal Growth and Functional Developments Official Journal of the Japan Society of Obstetrics and Gynecology ACTA OBST GYNEC JPN Vol, 38, No 8, pp, 1209-1217,1986
Head Area	HA	FG	B-CFM	Chitty	Chitty, L,S,, Altman, D,G, "Charts of Fetal Size: 2, Head Measurements" British Journal of Obstetrics & Gynaecology, jan, 1994, vol, 101, P, 35-43
Head Circumference	HC	FG	B-CFM	Chitty (drvd)	Chitty, L,S,, Altman, D,G, "Charts of Fetal Size: 2, Head Measurements" British Journal of Obstetrics & Gynaecology, jan, 1994, vol, 101, P, 35-43
	HC	FG	B-CFM	Chitty (Pltd)	Chitty, L,S,, Altman, D,G, "Charts of Fetal Size: 2, Head Measurements" British Journal of Obstetrics & Gynaecology, jan, 1994, vol, 101, P, 35-43
	HC	FG	B-CFM	CFEF	Biometry 2000, Fetal growth charts by the Collège Français d'Echographie Fœtale(CFEF; the "French College of Fetal Ultrasonography") and INSERM U 155, Gynecol Obstet Fertil 2000 Jun; 28 (6): 435-45

	HC	FG	B-CFM	Hadlock	Hadlock FP, Deter RL, Harrist RB, Park SK: "Estimating fetal age: Computer-assisted analysis of multiple fetal growth parameters" Radiology 1984; 152: 497-502,
	HC	FG	B-CFM	Hansmann	Hansmann M, Hackelöer B, Staudach A, "Ultrasound Diagnosis in Obstetrics and Gynecology" Springer Verlag, 1990, (ISBN 0-387-15348-9 Springer-Verlag New-York) ; P 431
Occipitofrontal Diameter	OFD	FG	B-CFM	Chitty	Chitty, L,S,, Altman, D,G, "Charts of Fetal Size: 2, Head Measurements" British Journal of Obstetrics & Gynaecology, jan, 1994, vol, 101, P, 35-43
	OFD	FG	B-CFM	Hansmann	Hansmann M, Hackelöer B, Staudach A, "Ultrasound Diagnosis in Obstetrics and Gynecology" Springer Verlag, 1990, (ISBN 0-387-15348-9 Springer-Verlag New-York) ; P 431
Transverse Abdominal Diameter	TAD	FG	B-CFM	CFEF	Biometry 2000, Fetal growth charts by the Collège Français d'Echographie Fœtale(CFEF; the "French College of Fetal Ultrasonography") and INSERM U 155, Gynecol Obstet Fertil 2000 Jun; 28 (6): 435-45
Thoracic diameter	Thd	FG	B-CFM	Hansmann	Hansmann M, Hackelöer B, Staudach A, "Ultrasound Diagnosis in Obstetrics and Gynecology" Springer Verlag, 1990, (ISBN 0-387-15348-9 Springer-Verlag New-York) ; P 431

Fetal Aorta PI		FG	PW	Schaffer	H, Schaffer "IPDS 1998 11th Congress of the International Perinatal Doppler Society," JOURNAL FÜR FERTILTÄT UND REPRODUKTION July 2-4, 1998
		FG	PW	Mai	R, Mai, P, Kristen, A, Rempen "Farb-Dopplersonographisme Normalwerte in der Schwangershaft Z," Geburish,u,Perinat, P 221-222
Fetal Aorta RI		FG	PW	Schaffer	R, Mai, P, Kristen, A, Rempen "Farb-Dopplersonographisme Normalwerte in der Schwangershaft Z," Geburish,u,Perinat, P 221-222
		FG	PW	Mai	R, Mai, P, Kristen, A, Rempen "Farb-Dopplersonographisme Normalwerte in der Schwangershaft Z," Geburish,u,Perinat, P 221-222
Left Uterin PI		FG	PW	Schaffer	H, Schaffer "IPDS 1998 11th Congress of the International Perinatal Doppler Society," JOURNAL FÜR FERTILTÄT UND REPRODUKTION July 2-4, 1998
Left Uterin RI		FG	PW	Schaffer	H, Schaffer "IPDS 1998 11th Congress of the International Perinatal Doppler Society," JOURNAL FÜR FERTILTÄT UND REPRODUKTION July 2-4, 1998
Right Uterin PI		FG	PW	Schaffer	H, Schaffer "IPDS 1998 11th Congress of the International Perinatal Doppler Society," JOURNAL FÜR FERTILTÄT UND REPRODUKTION July 2-4, 1998
Right Uterin RI		FG	PW	Schaffer	H, Schaffer "IPDS 1998 11th Congress of the International Perinatal Doppler Society," JOURNAL FÜR FERTILTÄT UND REPRODUKTION July 2-4, 1998
MCA PI		FG	PW	Schaffer	H, Schaffer "IPDS 1998 11th Congress of the International Perinatal Doppler Society," JOURNAL FÜR FERTILTÄT UND REPRODUKTION July 2-4, 1998
MCA PI		FG	PW	Mai	R, Mai, P, Kristen, A, Rempen "Farb-Dopplersonographisme Normalwerte in der Schwangershaft Z," Geburish,u,Perinat, P 221-222
MCA RI		FG	PW	Schaffer	H, Schaffer "IPDS 1998 11th Congress of the International Perinatal Doppler Society," JOURNAL FÜR FERTILTÄT UND REPRODUKTION July 2-4, 1998
MCA RI		FG	PW	Mai	R, Mai, P, Kristen, A, Rempen "Farb-Dopplersonographisme Normalwerte in der Schwangershaft Z," Geburish,u,Perinat, P 221-222

Umbilical artery RI		FG	PW	Schaffer	H, Schaffer "IPDS 1998 11th Congress of the International Perinatal Doppler Society," JOURNAL FÜR FERTILTÄT UND REPRODUKTION July 2-4, 1998
Umbilical artery RI		FG	PW	Mai	R, Mai, P, Kristen, A, Rempen "Farb-Dopplersonographisme Normalwerte in der Schwangershaft Z," Geburish,u,Perinat, P 221-222
Umbilical artery PI		FG	PW	Schaffer	R, Mai, P, Kristen, A, Rempen "Farb-Dopplersonographisme Normalwerte in der Schwangershaft Z," Geburish,u,Perinat, P 221-222
Umbilical artery PI		FG	PW	Mai	R, Mai, P, Kristen, A, Rempen "Farb-Dopplersonographisme Normalwerte in der Schwangershaft Z," Geburish,u,Perinat, P 221-222

NB: The obstetrical tables Chitty (drvd) are made to be used with a circumference calculated from two measured diameters. The obstetrical tables Chitty (Pltd) are made to be used with a circumference measured as an ellipse. It is thus recommended, in case of using the Chitty tables, to choose the Pltd version.
Precisions on GA dating: The values used by the software might present minor differences compared to the values published by the authors because of procedures used for representing the digital data. These differences generate minimal margins of error (cf below) which are added to the margins of error indicated by the authors.
- For all the tables: Margin of error GA < 1 day
- Table BPD Hansmann: Margin of error GA < 2 days
- Table Tokyo (Okai), Mai, Schaffer: Margin of error has not been précised (the use of these tables is to be avoided)

27.2 Detailed obstetrical tables

AC Jeanty FG

Age	5% (mm)	50% (mm)	95% (mm)
12+0	35	57	80
13+0	45	67	90
14+0	55	77	100
15+0	65	88	110
16+0	76	98	120
17+0	86	109	131
18+0	97	119	142
19+0	108	130	152
20+0	119	141	163
21+0	129	152	174
22+0	140	163	185
23+0	151	173	196
24+0	162	184	206
25+0	172	195	217
26+0	183	205	227
27+0	193	215	238
28+0	203	225	248
29+0	213	235	257
30+0	222	244	267
31+0	231	254	276
32+0	240	262	285
33+0	248	271	293
34+0	256	279	301
35+0	264	286	309
36+0	271	293	316
37+0	278	300	322
38+0	283	306	328
39+0	289	311	333
40+0	294	316	338

AC CFEF FG

Age	3% (mm)	50% (mm)	97% (mm)
15w0d	80.7	95.0	108.8
16w0d	91.3	106.4	121.6
17w0d	101.7	118.0	134.0
18w0d	111.8	129.2	146.6
19w0d	122.0	140.4	158.8
20w0d	132.0	151.4	171.0
21w0d	141.6	162.3	183.0
22w0d	151.4	173.0	194.7
23w0d	160.9	183.6	206.3
24w0d	170.2	194.0	218.0
25w0d	169.3	204.4	229.3
26w0d	188.4	214.5	240.6
27w0d	197.3	224.5	251.6
28w0d	206.2	234.4	262.6
29w0d	214.7	244.0	273.3
30w0d	223.2	253.6	283.7
31w0d	231.6	263.0	294.4
32w0d	239.7	272.2	304.6
33w0d	247.8	281.2	314.8
34w0d	255.6	290.2	324.8
35w0d	263.2	298.8	334.5
36w0d	271.0	307.4	344.3
37w0d	278.3	316.0	353.8
38w0d	285.6	324.7	363.0
39w0d	292.7	332.4	372.2
40w0d	298.0	339.0	380.0

AC Chitty (drvd) FG

Age	3% (mm)	50% (mm)	97% (mm)
12w0d	48	55,8	63,6
13w0d	58,5	67,4	76,3
14w0d	68,8	78,9	88,9
15w0d	79,1	90,3	101,5
16w0d	89,3	101,6	114
17w0d	99,5	112,9	126,4
18w0d	109,5	124,1	138,7
19w0d	119,5	135,2	150,9
20w0d	129,4	146,2	163,1
21w0d	139,2	157,2	175,1
22w0d	148,9	168	187,1
23w0d	158,5	178,7	198,9
24w0d	168	189,3	210,7
25w0d	177,3	199,8	222,3
26w0d	186,6	210,2	233,8
27w0d	195,7	220,4	245,2
28w0d	204,7	230,6	256,5
29w0d	213,5	240,6	267,6
30w0d	222,3	250,4	278,6
31w0d	230,9	260,1	289,4
32w0d	239,3	269,7	300,1
33w0d	247,6	279,1	310,7
34w0d	255,7	288,4	321,1
35w0d	263,7	297,5	331,3
36w0d	271,5	306,4	341,4
37w0d	279,1	315,2	351,2
38w0d	286,6	323,8	361
39w0d	293,8	332,2	370,5
40w0d	300,9	340,4	379,9
41w0d	307,8	348,4	389
42w0d	314,5	356,3	398

AC Chitty (Pltd) FG

Age	3% (mm)	50% (mm)	97% (mm)
12+0	47,7	58,9	70,2
13+0	58,7	70,8	82,9
14+0	69,7	82,7	95,6
15+0	80,6	94,4	108,3
16+0	91,4	106,1	120,8
17+0	102,2	117,7	133,3
18+0	112,9	129,3	145,7
19+0	123,5	140,7	158
20+0	133,9	152,1	170,2
21+0	144,3	163,3	182,3
22+0	154,6	174,5	194,4
23+0	164,8	185,5	206,3
24+0	174,9	196,5	218,1
25+0	184,9	207,3	229,7
26+0	194,7	218	241,3
27+0	204,4	228,6	252,7
28+0	214	239	264,1
29+0	223,5	249,3	275,2
30+0	232,8	259,5	286,2
31+0	241,9	269,5	297,1
32+0	251	279,4	307,9
33+0	259,8	289,1	318,4
34+0	268,5	298,7	328,9
35+0	277	308,1	339,1
36+0	285,4	317,3	349,2
37+0	293,6	326,3	359,1
38+0	301,6	335,2	368,8
39+0	309,4	343,9	378,4
40+0	317	352,4	387,7
41+0	324,5	360,7	396,9
42+0	331,7	368,8	405,8

AC Hadlock FG

Age	"-"SD (mm)	50% (mm)	"+"SD (mm)
12+0	32	46	59
13+0	46	59	73
14+0	59	73	86
15+0	73	86	99
16+0	86	99	112
17+0	98	112	125
18+0	111	124	138
19+0	123	137	150
20+0	136	149	162
21+0	148	161	174
22+0	159	173	186
23+0	171	185	198
24+0	183	196	209
25+0	194	207	221
26+0	205	218	232
27+0	216	229	242
28+0	226	240	253
29+0	237	250	263
30+0	247	260	274
31+0	257	270	284
32+0	267	280	293
33+0	276	290	303
34+0	286	299	312
35+0	295	308	322
36+0	304	317	331
37+0	313	326	339
38+0	321	335	348
39+0	330	343	357
40+0	338	351	365

AC Tokyo FG

Age	5% (mm)	50% (mm)	95% (mm)
16+0	93	109	125
17+0	103	120	136
18+0	112	130	147
19+0	122	140	158
20+0	131	151	169
21+0	140	161	180
22+0	150	171	191
23+0	159	181	202
24+0	168	191	212
25+0	177	201	223
26+0	186	210	233
27+0	195	220	244
28+0	203	229	254
29+0	211	238	264
30+0	220	247	273
31+0	228	256	283
32+0	235	265	292
33+0	243	273	301
34+0	250	281	310
35+0	257	289	319
36+0	264	297	327
37+0	270	304	335
38+0	276	311	343
39+0	282	318	350
40+0	288	324	357
41+0	293	330	364
42+0	297	336	370

APAD Merz FG

Age	5% (mm)	50% (mm)	95% (mm)
12+0	12	18	24
13+0	15	21	27
14+0	18	24	30
15+0	21	28	34
16+0	24	31	37
17+0	28	34	41
18+0	31	37	44
19+0	34	41	48
20+0	37	44	51
21+0	40	47	54
22+0	43	50	58
23+0	46	54	61
24+0	49	57	65
25+0	53	60	68
26+0	56	64	71
27+0	59	67	75
28+0	62	70	78
29+0	65	73	82
30+0	68	77	85
31+0	71	80	88
32+0	74	83	92
33+0	78	86	95
34+0	81	90	98
35+0	84	93	102
36+0	87	96	105
37+0	90	99	109
38+0	93	103	112
39+0	97	106	115
40+0	100	109	119

AXT Tokyo FG

Age	5% (cm^2)	50% (cm^2)	95% (cm^2)
16+0	7	11,2	15,5
17+0	8,7	13,3	18
18+0	10,5	15,6	20,7
19+0	12,5	18,1	23,6
20+0	14,7	20,8	26,8
21+0	17,1	23,6	30,2
22+0	19,6	26,7	33,8
23+0	22,2	29,9	37,5
24+0	25	33,2	41,5
25+0	27,9	36,7	45,6
26+0	30,9	40,3	49,8
27+0	33,9	44,1	54,2
28+0	37,1	47,9	58,7
29+0	40,3	51,8	63,3
30+0	43,5	55,7	68
31+0	46,8	59,7	72,7
32+0	50	63,8	77,6
33+0	53,3	67,8	82,4
34+0	56,5	71,9	87,3
35+0	59,7	75,9	92,2
36+0	62,8	79,9	97
37+0	65,9	83,9	101,9
38+0	68,8	87,7	106,7
39+0	71,6	91,5	111,4
40+0	74,3	95,1	116
41+0	76,8	98,6	120,5
42+0	79,1	102	124,8

BPD Tokyo FG

Age	5% (mm)	50% (mm)	95% (mm)
10+0	10,5	14,3	18,1
11+0	13,7	17,6	21,5
12+0	17	21	25
13+0	20,3	24,4	28,5
14+0	23,6	27,8	32
15+0	26,9	31,2	35,5
16+0	30,2	34,6	39
17+0	33,5	38	42,4
18+0	36,8	41,3	45,8
19+0	40	44,6	49,2
20+0	43,2	47,9	52,6
21+0	46,3	51,1	55,9
22+0	49,3	54,2	59,1
23+0	52,3	57,3	62,3
24+0	55,2	60,3	65,3
25+0	58	63,2	68,4
26+0	60,7	66	71,3
27+0	63,3	68,7	74,1
28+0	65,9	71,4	76,9
29+0	68,3	73,9	79,4
30+0	70,6	76,3	81,9
31+0	72,8	78,5	84,2
32+0	74,7	80,6	86,5
33+0	76,7	82,6	88,5
34+0	78,5	84,5	90,4
35+0	80	86,1	92,2
36+0	81,4	87,6	93,8
37+0	82,7	89	95,2
38+0	83,7	90,1	96,5
39+0	84,6	91,1	97,5
40+0	85,2	91,8	98,4
41+0	85,8	92,4	99
42+0	86	92,8	99,5

BPD CFEF FG

Age	3% (mm)	50% (mm)	97% (mm)
11w0d	12.1	15.4	18.6
12w0d	15.8	19.4	22.9
13w0d	19.5	23.3	27.1
14w0d	23.1	27.1	31.2
15w0d	26.6	30.9	35.2
16w0d	30.0	34.5	39 .1
17w0d	33.3	38.1	42.9
18w0d	36.6	41.6	46.6
19w0d	39.8	45.0	50.2
20w0d	42.9	48.2	53.6
21w0d	45.9	51.4	57.0
22w0d	48.8	54.5	60.3
23w0d	51.6	57.5	63.5
24w0d	54.4	60.4	66.5
25w0d	57.0	63.3	69.4
26w0d	59.6	65.9	72.3
27w0d	62.1	68.6	75.0
28w0d	64.5	71.0	77.6
29w0d	66.8	73.5	80.1
30w0d	69.1	75.8	82.5
31w0d	71.2	78 .0	84.8
32w0d	73.3	80.2	87.0
33w0d	75.2	82.1	89.0
34w0d	77.1	84.1	91.0
35w0d	78.9	85.9	92.8
36w0d	80.6	87.6	94.6
37w0d	82.3	89.2	96.2
38w0d	83.8	90.7	97.7
39w0d	85.2	92.1	99.1
40w0d	86.6	93.5	100.3
41w0d	87.0	94.0	101.0

BPD Chitty(O-O) FG

Age	3% (mm)	50% (mm)	97% (mm)
12+0	15,5	19,7	23,9
13+0	19,2	23,5	27,8
14+0	22,9	27,3	31,7
15+0	26,5	31	35,6
16+0	30,1	34,7	39,4
17+0	33,6	38,3	43,1
18+0	37	41,9	46,8
19+0	40,4	45,4	50,4
20+0	43,7	48,8	53,9
21+0	47	52,2	57,4
22+0	50,2	55,5	60,8
23+0	53,2	58,7	64,1
24+0	56,3	61,8	67,3
25+0	59,2	64,8	70,4
26+0	62	67,8	73,5
27+0	64,7	70,6	76,5
28+0	67,4	73,4	79,3
29+0	69,9	76	82,1
30+0	72,4	78,6	84,7
31+0	74,7	81	87,3
32+0	76,9	83,3	89,7
33+0	79	85,5	92
34+0	81	87,6	94,3
35+0	82,9	89,6	96,3
36+0	84,6	91,4	98,3
37+0	86,2	93,2	100,1
38+0	87,7	94,7	101,8
39+0	89	96,2	103,4
40+0	90,2	97,5	104,8
41+0	91,3	98,7	106,1
42+0	92,2	99,7	107,2

BPD Hadlock FG

Age	- 1 SD (mm)	50% (mm)	+ 1 SD (mm)
12+0	14.3	17.3	20.3
13+0	18.2	21.2	24.2
14+0	21.9	24.9	27.9
15+0	25.6	28.6	31.6
16+0	29.3	32.3	35.3
17+0	32.9	35.9	38.9
18+0	36.4	39.4	42.4
19+0	39.9	42.9	45.9
20+0	43.3	46.3	49.3
21+0	46.7	49.7	52.7
22+0	49.9	52.9	55.9
23+0	53,1	56.1	59.1
24+0	56,2	59.2	62.2
25+0	59,2	62.2	65.2
26+0	62.1	65.1	68.1
27+0	64,9	67.9	70.9
28+0	67,6	70.6	73.6
29+0	70.2	73.2	76.2
30+0	72,7	75.7	78.7
31+0	75.1	78.1	81.1
32+0	77.4	80.4	83.4
33+0	79.6	82.6	85.6
34+0	81.6	84.6	87.6
35+0	83.5	86.5	89.5
36+0	85.3	88.3	91.3
37+0	87	90	93
38+0	88.5	91.5	94.5
39+0	89.9	92.9	95.9
40+0	91.2	94.2	97.2

BPD Osaka Identical

Age	"-"2SD (mm)	50ème	"+"2SD (mm)
10+0	9,5	13,3	17,1
11+0	13,2	17,2	21,2
12+0	16,7	20,9	25,1
13+0	20,2	24,6	29
14+0	23,6	28,2	32,8
15+0	27	31,8	36,6
16+0	30,2	35,2	40,2
17+0	33,4	38,6	43,8
18+0	36,6	42	47,4
19+0	39,7	45,3	50,9
20+0	42,7	48,5	54,3
21+0	45,9	51,7	57,5
22+0	48,8	54,8	60,8
23+0	51,7	57,9	64,1
24+0	54,5	60,9	67,3
25+0	57,5	63,9	70,3
26+0	60,1	66,7	73,3
27+0	62,7	69,5	76,3
28+0	65,5	72,3	79,1
29+0	67,9	74,9	81,9
30+0	70,4	77,4	84,4
31+0	72,6	79,8	87
32+0	74,9	82,1	89,3
33+0	76,9	84,3	91,7
34+0	78,8	86,2	93,6
35+0	80,6	88	95,4
36+0	82	89,6	97,2
37+0	83,4	91	98,6
38+0	84,5	92,1	99,7
39+0	85,2	93	100,8
40+0	85,8	93,6	101,4

BPD Hansmann FG

Age	5% (mm)	50% (mm)	95% (mm)
10+0	9	14	18
11+0	13	17	22
12+0	16	21	25
13+0	20	24	29
14+0	23	28	32
15+0	27	31	36
16+0	30	35	39
17+0	34	38	43
18+0	37	42	46
19+0	40	45	49
20+0	44	48	53
21+0	47	51	56
22+0	50	55	59
23+0	53	58	62
24+0	56	61	65
25+0	59	64	68
26+0	62	67	71
27+0	65	70	74
28+0	68	72	77
29+0	70	75	79
30+0	73	77	82
31+0	75	79	84
32+0	77	82	86
33+0	79	84	88
34+0	81	86	90
35+0	83	87	92
36+0	84	89	93
37+0	86	90	95
38+0	87	91	96
39+0	88	93	97
40+0	89	93	98

Clavicle Yarkoni FG

Age	3% (mm)	50% (mm)	97% (mm)
15+0	11	15,8	20,6
16+0	12	16,8	21,6
17+0	13	17,8	22,6
18+0	13,9	18,7	23,5
19+0	14,9	19,7	24,5
20+0	15,9	20,7	25,5
21+0	16,9	21,7	26,5
22+0	17,9	22,7	27,5
23+0	18,8	23,6	28,4
24+0	19,8	24,6	29,4
25+0	20,8	25,6	30,4
26+0	21,8	26,6	31,4
27+0	22,7	27,5	32,3
28+0	23,7	28,5	33,3
29+0	24,7	29,5	34,3
30+0	25,7	30,5	35,3
31+0	26,7	31,5	36,3
32+0	27,6	32,4	37,2
33+0	28,6	33,4	38,2
34+0	29,6	34,4	39,2
35+0	30,6	35,4	40,2
36+0	31,6	36,4	41,2
37+0	32,5	37,3	42,1
38+0	33,5	38,3	43,1
39+0	34,5	39,3	44,1
40+0	35,5	40,3	45,1

CRL Hadlock FG

Age	"-"1SD (mm)	50% (mm)	"+"1SD (mm)
5+5	3.3	3.8	4.3
6+0	4.0	4.6	5.2
7+0	7.4	8.5	9.6
8+0	12.6	14.5	16.4
9+0	19.6	22.6	25.6
10+0	28.3	32.6	36.9
11+0	38.2	44.1	49.9
12+0	48.8	56.2	63.6
13+0	59.3	68.3	77.3
14+0	69.3	79.8	90.3
15+0	78.5	90.5	102.4
16+0	87.1	100.3	113.5
17+0	95.3	109.8	124.3
18+0	104.0	119.8	135.6

CRL Hansmann FG

Age	"-"2SD (mm)	50% (mm)	"+"2SD (mm)
6+0	2,3	6,9	11,5
7+0	5	11,4	17,8
8+0	8	16,2	24,4
9+0	12,5	22,6	32,6
10+0	19,2	31	42,8
11+0	27,9	41,6	55,2
12+0	38,4	53,8	69,2
13+0	49,7	66,9	84,1
14+0	60,9	80	99
15+0	71,4	92,2	113
16+0	80,3	103	125,6
17+0	87,4	111,8	136,2
18+0	92,8	119,1	145,3
19+0	97,5	125,5	153,6
20+0	102,9	132,8	162,6
20+1	104	134	164,1

CRL Osaka Identical

Age	"-"2SD	50%	"+"2SD (mm)
7+0	5,5	8,7	11,9
8+0	7,8	13	18,2
9+0	13	20,4	27,8
10+0	20,4	30	39,6
11+0	29,6	41,2	52,8
12+0	39,2	53	66,8
12+6	47,6	63,2	78,8

CRL Rempen FG

Age	5%	50%	95%
5+5	0	1,2	9
6+0	0	3	10,8
7+0	1,7	9,5	17,3
8+0	8,9	16,7	24,5
9+0	16,8	24,6	32,4
10+0	25,5	33,3	41,1
11+0	34,8	42,6	50,4
12+0	44,9	52,7	60,5
13+0	55,7	63,5	71,3
13+2	58,9	66,7	74,5

CRL Robinson FG

Age	" - " 2SD	50%	" + " 2SD
6+2	3,9	6,8	9,8
7+0	6,6	10,3	13,9
8+0	11,7	16,4	21
9+0	18,2	23,9	29,5
10+0	26,1	32,7	39,3
11+0	35,5	43,1	50,7
12+0	46,2	54,8	63,3
13+0	58,4	67,9	77,4
14+0	71,9	82,4	92,9

CRL Tokyo FG

Age	5% (mm)	50% (mm)	95% (mm)
7+6	9,5	14,6	20,5
8+0	9,6	15,3	20,7
9+0	13,7	20,2	25,4
10+0	19,3	27,8	33,3
11+0	26,4	36,6	43,7
12+0	35,6	46,8	56,7
13+0	45	57,9	71,5
14+0	56,5	70,3	90,1

FL CFEF FG

Age	3% (mm)	50% (mm)	97% (mm)
12w0d	2.8	6.3	10.0
13w0d	6.1	9.9	13.7
14w0d	9.4	13.3	17.3
15w0d	12.6	16.7	20.8
16w0d	15.7	20.0	24.2
17w0d	18.7	23.1	27.5
18w0d	21.7	26.2	30.8
19w0d	24.6	29.3	33.9
20w0d	27.4	32.2	37.0
21w0d	30.1	35.1	40.0
22w0d	32.8	37.9	42.9
23w0d	35.3	40.5	45.7
24w0d	37.9	43.2	48.4
25w0d	40.3	45.7	51.1
26w0d	42.7	48.2	53.6
27w0d	45.0	50.5	56.1
28w0d	47.1	52.8	58.5
29w0d	49.2	54.9	60.7
30w0d	51.3	57.1	62.9
31w0d	53.3	59.2	65.0
32w0d	55.1	61.1	67.1
33w0d	57.0	63.0	39.0
34w0d	58.7	64.8	70.8
35w0d	60.3	66.5	72.6
36w0d	61.9	68.1	74.3
37w0d	63.4	69.6	75.9
38w0d	64.8	71.1	77.4
39w0d	66.2	72.5	78.8
40w0d	67.4	73.8	80.2
41w0d	68.0	74.0	81.0

FL Chitty FG

Age	3% (mm)	50% (mm)	97% (mm)
12+0	4,4	7,7	11
13+0	7,5	10,9	14,3
14+0	10,6	14,1	17,6
15+0	13,6	17,2	20,8
16+0	16,5	20,3	24
17+0	19,4	23,3	27,1
18+0	22,3	26,3	30,2
19+0	25,1	29,2	33,3
20+0	27,9	32,1	36,2
21+0	30,6	34,9	39,2
22+0	33,2	37,6	42
23+0	35,8	40,3	44,8
24+0	38,3	42,9	47,6
25+0	40,7	45,5	50,2
26+0	43,1	48	52,8
27+0	45,4	50,4	55,3
28+0	47,6	52,7	57,8
29+0	49,8	54,9	60,1
30+0	51,8	57,1	62,4
31+0	53,8	59,2	64,6
32+0	55,7	61,2	66,7
33+0	57,5	63,1	68,7
34+0	59,2	64,9	70,6
35+0	60,8	66,6	72,4
36+0	62,3	68,2	74,1
37+0	63,6	69,7	75,7
38+0	64,9	71,1	77,2
39+0	66,1	72,4	78,6
40+0	67,2	73,5	79,9
41+0	68,1	74,6	81,1
42+0	68,9	75,5	82,1

FL Hadlock FG

Age	"-" SD	50%	"+" SD
12+0	4,2	7,2	10,2
13+0	7,7	10,7	13,7
14+0	11	14	17
15+0	14,3	17,3	20,3
16+0	17,5	20,5	23,5
17+0	20,7	23,7	26,7
18+0	23,7	26,7	29,7
19+0	26,8	29,8	32,8
20+0	29,7	32,7	35,7
21+0	32,6	35,6	38,6
22+0	35,4	38,4	41,4
23+0	38,1	41,1	44,1
24+0	40,8	43,8	46,8
25+0	43,4	46,4	49,4
26+0	45,9	48,9	51,9
27+0	48,4	51,4	54,4
28+0	50,8	53,8	56,8
29+0	53,1	56,1	59,1
30+0	55,4	58,4	61,4
31+0	57,6	60,6	63,4
32+0	59,7	62,7	65,7
33+0	61,8	64,8	67,8
34+0	63,8	66,8	69,8
35+0	65,7	68,7	71,7
36+0	67,6	70,6	73,6
37+0	69,3	72,3	75,3
38+0	71,1	74,1	77,1
39+0	72,7	75,7	78,7
40+0	74,3	77,3	80,3

FL Hansmann Identical

Age	50% (mm)
13+0	10
14+0	12
15+0	16
16+0	18
17+0	22
18+0	25
19+0	28
20+0	31
21+0	34
22+0	36
23+0	39
24+0	41
25+0	44
26+0	47
27+0	49
28+0	51
29+0	54
30+0	56
31+0	59
32+0	61
33+0	63
34+0	65
35+0	67
36+0	69
37+0	71
38+0	73
39+0	74
40+0	75

FL Osaka Identical

Age	"-" 2SD	50ème	"+" 2SD
13+0	5,2	9,4	13,6
14+0	8,2	12,6	17
15+0	11,3	15,7	20,1
16+0	14,4	18,8	23,2
17+0	17,2	21,8	26,4
18+0	20,1	24,7	29,3
19+0	22,7	27,5	32,3
20+0	25,5	30,3	35,1
21+0	28,2	33	37,8
22+0	30,7	35,7	40,7
23+0	33,3	38,3	43,3
24+0	35,8	40,8	45,8
25+0	38	43,2	48,4
26+0	40,4	45,6	50,8
27+0	42,4	47,8	53,2
28+0	44,7	50,1	55,5
29+0	46,8	52,2	57,6
30+0	48,7	54,3	59,9
31+0	50,7	56,3	61,9
32+0	52,4	58,2	64
33+0	54,3	60,1	65,9
34+0	56,1	61,9	67,7
35+0	57,6	63,6	69,6
36+0	59,3	65,3	71,3
37+0	60,7	66,9	73,1
38+0	62,2	68,4	74,6
39+0	63,6	69,8	76
40+0	64,8	71,2	77,6

FL Tokyo FG

Age	5% (mm)	50% (mm)	95% (mm)
16+0	17,1	21,4	25,8
17+0	19,6	24	28,4
18+0	22,1	26,5	31
19+0	24,6	29,1	33,6
20+0	27,1	31,6	36,2
21+0	29,5	34,1	38,8
22+0	31,9	36,6	41,3
23+0	34,3	39,1	43,8
24+0	36,7	41,5	46,3
25+0	39	43,9	48,7
26+0	41,3	46,2	51,1
27+0	43,5	48,4	53,4
28+0	45,6	50,6	55,7
29+0	47,7	52,8	57,9
30+0	49,7	54,8	60
31+0	51,6	56,8	62
32+0	53,5	58,7	64
33+0	55,2	60,5	65,8
34+0	56,9	62,2	67,6
35+0	58,4	63,8	69,2
36+0	59,9	65,3	70,8
37+0	61,2	66,7	72,2
38+0	62,4	68	73,6
39+0	63,5	69,1	74,7
40+0	64,4	70,1	75,8
41+0	65,3	71	76,7
42+0	65,9	71,7	77,5

FTA Osaka Identical

Age	"-"2SD	50ème	"+"2SD
14+0	3,2	5,6	8
15+0	4,5	7,3	10,1
16+0	6	9,2	12,4
17+0	7,7	11,3	14,9
18+0	9,5	13,5	17,5
19+0	11,2	15,8	20,4
20+0	13,4	18,4	23,4
21+0	15,4	21	26,6
22+0	17,6	23,8	30
23+0	20	26,8	33,6
24+0	22,5	29,9	37,3
25+0	25,1	33,1	41,1
26+0	27,7	36,5	45,3
27+0	30,5	39,9	49,3
28+0	33,2	43,4	53,6
29+0	36,3	47,1	57,9
30+0	39,2	50,8	62,4
31+0	42,1	54,5	66,9
32+0	44,9	58,3	71,7
33+0	47,9	62,1	76,3
34+0	50,8	65,8	80,8
35+0	53,5	69,5	85,5
36+0	56,4	73,2	90
37+0	59	76,8	94,6
38+0	61,4	80,2	99
39+0	63,7	83,5	103,3
40+0	65,8	86,6	107,4

GS Hansmann

Weeks and days	50th
4+6	7
5+5	9
6+0	10
6+2	13
6+5	15
7+3	24
8+2	28
9+0	34

GS Tokyo FG

Age	5% (mm)	50% (mm)	95% (mm)
4+0	5,6	10,3	17
5+0	9,4	16,1	24,1
6+0	13,2	22,1	31,1
7+0	17,7	28,6	39
8+0	22	34,9	47,8
9+0	27,4	41,9	57,8
10+0	33,6	49,3	69,6
11+0	40,5	57,6	84,2

GS Rempen FG

Age	5% (mm)	50% (mm)	95% (mm)
4w4d	0.0	0.5	11.0
5w0d	0.0	4.5	15.0
6w0d	2.9	13.4	23.9
7w0d	11.2	21.7	32.2
8w0d	19.0	29.5	40.0
9w0d	26.1	36.6	47.1
10w0d	32.6	43.1	53.6
11w0d	38.5	49.0	59.5
12w0d	43.8	54.3	64.8
13w0d	48.6	59.1	69.6
13w2d	49.8	60.3	70.8

HA Chitty FG

Age	3% (cm^2)	50% (cm^2)	97% (cm^2)
12+0	2,4	3,6	5,1
13+0	3,7	5,3	7,1
14+0	5,3	7,2	9,4
15+0	7,2	9,4	12
16+0	9,3	11,9	14,8
17+0	11,6	14,6	17,9
18+0	14,1	17,5	21,2
19+0	16,8	20,6	24,7
20+0	19,7	23,9	28,5
21+0	22,7	27,3	32,3
22+0	25,8	30,9	36,4
23+0	29,1	34,6	40,5
24+0	32,4	38,4	44,8
25+0	35,9	42,2	49,1
26+0	39,3	46,1	53,5
27+0	42,8	50,1	57,9
28+0	46,3	54	62,3
29+0	49,8	57,9	66,7
30+0	53,2	61,8	71
31+0	56,6	65,6	75,3
32+0	59,8	69,3	79,5
33+0	63	72,9	83,5
34+0	66	76,4	87,4
35+0	68,9	79,6	91,2
36+0	71,6	82,7	94,7
37+0	74,1	85,6	98,1
38+0	76,4	88,3	101,2
39+0	78,4	90,7	104
40+0	80,2	92,9	106,5
41+0	81,7	94,8	108,8
42+0	83	96,3	110,7

HC CFEF FG

Age	3% (mm)	50% (mm)	97% (mm)
16w0d	105.8	120.9	136.1
17w0d	118.7	134.5	150.4
18w0d	131.1	147.6	164.1
19w0d	143.0	160.3	177.5
20w0d	154.5	172.5	190.5
21w0d	165.4	184.2	203.1
22w0d	176.1	195.7	215.2
23w0d	186.3	206.6	226.8
24w0d	196.2	217.2	238.0
25w0d	205.5	227.3	248.8
26w0d	214.4	236.7	259.2
27w0d	222.9	246.0	269.1
28w0d	231.0	254.8	278.6
29w0d	238.4	263.0	287.6
30w0d	245.9	270.8	296.0
31w0d	252.5	278.3	304.3
32w0d	258.9	285.3	312.0
33w0d	264.6	292.0	319.1
34w0d	270.1	298.1	325.9
35w0d	275.3	303.6	332.2
36w0d	279.8	308.8	338.0
37w0d	283.9	313.5	343.3
38w0d	287.6	317.9	348.3
39w0d	290.9	321.9	352.7
40w0d	293.0	324.0	356.0

HC Chitty(drvd) FG

Age	3% (mm)	50% (mm)	97% (mm)
12+0	55,5	68,1	80,7
13+0	69,1	82,1	95,2
14+0	82,5	96	109,5
15+0	95,7	109,6	123,6
16+0	108,7	123,1	137,4
17+0	121,5	136,3	151,1
18+0	134	149,3	164,5
19+0	146,3	162	177,6
20+0	158,3	174,4	190,5
21+0	170	186,5	203,1
22+0	181,4	198,4	215,4
23+0	192,5	209,9	227,4
24+0	203,3	221,1	239
25+0	213,7	232	250,3
26+0	223,7	242,5	261,2
27+0	233,4	252,6	271,8
28+0	242,7	262,4	282
29+0	251,6	271,7	291,8
30+0	260,1	280,6	301,1
31+0	268,2	289,1	310
32+0	275,8	297,2	318,5
33+0	283	304,8	326,6
34+0	289,6	311,9	334,1
35+0	295,8	318,5	341,2
36+0	301,5	324,6	347,8
37+0	306,7	330,3	353,8
38+0	311,4	335,3	359,3
39+0	315,5	339,9	364,3
40+0	319	343,9	368,7
41+0	322	347,3	372,6
42+0	324,4	350,1	375,8

HC Chitty(Pltd) FG

Age	3% (mm)	50% (mm)	97% (mm)
12+0	57,4	69,5	81,5
13+0	71,1	83,6	96,1
14+0	84,7	97,6	110,6
15+0	98,1	111,4	124,8
16+0	111,2	125	138,8
17+0	124,1	138,3	152,6
18+0	136,8	151,5	166,1
19+0	149,2	164,3	179,4
20+0	161,3	176,9	192,4
21+0	173,2	189,2	205,1
22+0	184,8	201,2	217,6
23+0	196	212,8	229,7
24+0	206,9	224,2	241,5
25+0	217,5	235,2	252,9
26+0	227,7	245,8	264
27+0	237,5	256,1	274,7
28+0	247	266	285
29+0	256,1	275,5	295
30+0	264,7	284,6	304,5
31+0	272,9	293,2	313,6
32+0	280,7	301,5	322,2
33+0	288	309,2	330,4
34+0	294,9	316,5	338,1
35+0	301,2	323,3	345,4
36+0	307,1	329,6	352,1
37+0	312,5	335,4	358,3
38+0	317,3	340,6	364
39+0	321,6	345,3	369,1
40+0	325,3	349,5	373,7
41+0	328,4	353,1	377,8
42+0	331	356,1	381,2

HC Hadlock FG

Age	"-" SD	50ème	"+" SD
12+0	58	68	78
13+0	72,4	82,4	92,4
14+0	86,6	96,6	106,6
15+0	100,6	110,6	120,6
16+0	114,4	124,4	134,4
17+0	127,9	137,9	147,9
18+0	141,1	151,1	161,1
19+0	154,1	164,1	174,1
20+0	166,8	176,8	186,8
21+0	179,2	189,2	199,2
22+0	191,3	201,3	211,3
23+0	203	213	223
24+0	214,4	224,4	234,4
25+0	225,4	235,4	245,4
26+0	236	246	256
27+0	246,3	256,3	266,3
28+0	256,1	266,1	276,1
29+0	265,5	275,5	285,5
30+0	274,4	284,4	294,4
31+0	282,9	292,9	302,9
32+0	290,9	300,9	310,9
33+0	298,4	308,4	318,4
34+0	305,5	315,5	325,5
35+0	312	322	332
36+0	317,9	327,9	337,9
37+0	323,3	333,3	343,3
38+0	328,2	338,2	348,2
39+0	332,5	342,5	352,5
40+0	336,1	346	356,1

HC Hansmann Identical

weeks+days	50th
14+0	106
15+0	115
16+0	127
17+0	140
18+0	152
19+0	164
20+0	176
21+0	189
22+0	203
23+0	215
24+0	226
25+0	239
26+0	251
27+0	263
28+0	274
29+0	284
30+0	293
31+0	303
32+0	311
33+0	318
34+0	325
35+0	332
36+0	337
37+0	340
38+0	344
39+0	347
40+0	349

OFD Chitty FG

Age	3% (mm)	50% (mm)	97% (mm)
12+0	17,7	23,4	29,2
13+0	22,9	28,6	34,2
14+0	28	33,6	39,2
15+0	33	38,6	44,2
16+0	37,9	43,5	49
17+0	42,7	48,3	53,8
18+0	47,4	53	58,6
19+0	51,9	57,6	63,3
20+0	56,3	62,1	67,9
21+0	60,6	66,5	72,4
22+0	64,8	70,8	76,8
23+0	68,8	74,9	81,1
24+0	72,6	79	85,4
25+0	76,3	82,9	89,5
26+0	79,8	86,7	93,5
27+0	83,1	90,3	97,4
28+0	86,3	93,8	101,2
29+0	89,3	97,1	104,9
30+0	92,1	100,2	108,4
31+0	94,7	103,2	111,8
32+0	97,1	106,1	115
33+0	99,4	108,7	118,1
34+0	101,4	111,2	121
35+0	103,2	113,5	123,8
36+0	104,7	115,6	126,4
37+0	106,1	117,5	128,9
38+0	107,2	119,2	131,1
39+0	108,1	120,6	133,1
40+0	108,7	121,9	135,1
41+0	109,1	123	136,8
42+0	109,3	123,8	138,3

OFD Hansmann Identical

weeks+days	50th
14+0	31
15+0	38
16+0	41
17+0	46
18+0	50
19+0	54
20+0	58
21+0	63
22+0	67
23+0	72
24+0	76
25+0	80
26+0	84
27+0	88
28+0	91
29+0	95
30+0	98
31+0	100
32+0	103
33+0	105
34+0	107
35+0	109
36+0	111
37+0	112
38+0	113
39+0	114
40+0	115

TAD CFEF FG

Age	3% (mm)	50% (mm)	97% (mm)
11w0d	9.7	13.5	17.3
12w0d	12.7	17.0	21.5
13w0d	15.6	20.6	25.5
14w0d	18.7	24.0	29.6
15w0d	21.8	27.7	33.6
16w0d	25.0	31.2	37.5
17w0d	28.2	34.7	41.4
18w0d	31.5	38.3	45.1
19w0d	34.8	41.7	48.6
20w0d	38.2	45.2	52.2
21w0d	41.1	48.3	55.6
22w0d	44.2	51.6	59.1
23w0d	47.0	54.7	62.5
24w0d	49.8	57.9	66.0
25w0d	52.5	61.0	69.4
26w0d	55.2	64.0	72.9
27w0d	57.7	67.1	76.4
28w0d	60.4	70.3	79.9
29w0d	63.1	73.3	83.3
30w0d	65.8	76.2	86.8
31w0d	68.4	79.3	90.1
32w0d	70.9	82.1	93.4
33w0d	73.1	84.8	96.6
34w0d	75.3	87.6	99.9
35w0d	77.0	90.0	103.0
36w0d	78.5	92.4	106.3
37w0d	79.8	94.8	109.7
38w0d	80.9	97.0	113.3
39w0d	81.9	99.3	117.0
40w0d	82.6	101.6	120.7
41w0d	82.8	103.0	123.0

THD Hansmann Identical

Age	50th
12+0	17
13+0	20
14+0	24
15+0	27
16+0	31
17+0	34
18+0	37
19+0	40
20+0	44
21+0	47
22+0	50
23+0	53
24+0	56
25+0	59
26+0	62
27+0	65
28+0	69
29+0	72
30+0	74
31+0	78
32+0	81
33+0	83
34+0	86
35+0	89
36+0	92
37+0	94
38+0	97
39+0	99
40+0	101

Fetal Ao RI Mai FG

Age	5%	50%	95%
30+0	0,74	0,81	0,89
31+0	0,73	0,8	0,88
32+0	0,72	0,8	0,88
33+0	0,71	0,79	0,87
34+0	0,71	0,78	0,86
35+0	0,7	0,78	0,86
36+0	0,7	0,77	0,85
37+0	0,69	0,77	0,85
38+0	0,69	0,77	0,85
39+0	0,69	0,77	0,85
40+0	0,69	0,77	0,85

Fetal Ao RI Schaffer FG

Age	5%	50%	95%
20w0d	0.77	0.84	0.90
21w0d	0.77	0.84	0.90
22w0d	0.77	0.84	0.90
23w0d	0.77	0.84	0.90
24w0d	0.77	0.84	0.90
25w0d	0.77	0.84	0.90
26w0d	0.77	0.84	0.91
27w0d	0.77	0.84	0.91
28w0d	0.77	0.84	0.91
29w0d	0.77	0.84	0.91
30w0d	0.78	0.84	0.91
31w0d	0.78	0.84	0.91
32w0d	0.78	0.84	0.91
33w0d	0.78	0.85	0.91
34w0d	0.78	0.85	0.91
35w0d	0.78	0.85	0.91
36w0d	0.78	0.85	0.92
37w0d	0.78	0.85	0.92
38w0d	0.78	0.85	0.92
39w0d	0.79	0.85	0.92
40w0d	0.79	0.85	0.92
41w0d	0.79	0.86	0.92
42w0d	0.79	0.86	0.92

Fetal Ao PI Mai FG

Age	5%	50%	95%
30+0	1,39	1,73	2,07
31+0	1,36	1,7	2,04
32+0	1,33	1,67	2,01
33+0	1,31	1,65	1,99
34+0	1,29	1,63	1,97
35+0	1,28	1,62	1,96
36+0	1,27	1,61	1,95
37+0	1,27	1,61	1,95
38+0	1,28	1,62	1,96
39+0	1,29	1,63	1,97
40+0	1,3	1,64	1,98

Fetal Ao PI Schaffer FG

Age	5%	50%	95%
20w0d	1.34	1.88	2.42
21w0d	1.35	1.89	2.44
22w0d	1.37	1.91	2.45
23w0d	1.38	1.92	2.46
24w0d	1.39	1.93	2.47
25w0d	1.41	1.95	2.49
26w0d	1.42	1.96	2.50
27w0d	1.43	1.97	2.51
28w0d	1.45	1.99	2.53
29w0d	1.47	2.01	2.55
30w0d	1.48	2.02	2.56
31w0d	1.50	2.04	2.58
32w0d	1.52	2.06	2.60
33w0d	1.53	2.07	2.62
34w0d	1.55	2.09	2.63
35w0d	1.57	2.11	2.65
36w0d	1.59	2.13	2.67
37w0d	1.61	2.15	2.69
38w0d	1.63	2.17	2.70
39w0d	165	2.20	2.74
40w0d	1.68	2.22	2.76
41w0d	1.70	2.24	2.78
42w0d	1.72	2.26	2.80

MCA RI Mai FG

Age	5%	50%	95%
30+0	0,75	0,84	0,93
31+0	0,73	0,83	0,92
32+0	0,73	0,82	0,91
33+0	0,71	0,81	0,9
34+0	0,71	0,8	0,89
35+0	0,7	0,79	0,88
36+0	0,69	0,78	0,87
37+0	0,68	0,77	0,86
38+0	0,67	0,76	0,85
39+0	0,66	0,75	0,85
40+0	0,65	0,75	0,84

MCA RI Schaffer FG

Age	5%	50%	95%
24+0	0,65	0,79	0,92
25+0	0,67	0,8	0,94
26+0	0,67	0,81	0,95
27+0	0,68	0,82	0,95
28+0	0,69	0,82	0,96
29+0	0,69	0,83	0,96
30+0	0,69	0,83	0,96
31+0	0,69	0,83	0,96
32+0	0,69	0,83	0,96
33+0	0,69	0,82	0,96
34+0	0,68	0,81	0,95
35+0	0,67	0,81	0,94
36+0	0,66	0,79	0,93
37+0	0,65	0,78	0,92
38+0	0,63	0,77	0,9
39+0	0,61	0,75	0,88
40+0	0,6	0,73	0,87
41+0	0,57	0,71	0,84
42+0	0,55	0,69	0,82

MCA PI Mai FG

Age	5%	50%	95%
30+0	1,53	1,96	2,39
31+0	1,47	1,89	2,32
32+0	1,41	1,83	2,26
33+0	1,35	1,78	2,21
34+0	1,3	1,73	2,15
35+0	1,26	1,68	2,11
36+0	1,22	1,64	2,07
37+0	1,18	1,6	2,03
38+0	1,15	1,57	2
39+0	1,13	1,55	1,97
40+0	1,1	1,52	1,95

MCA PI Schaffer FG

Age	5%	50%	95%
24+0	1,06	1,69	2,32
25+0	1,13	1,76	2,39
26+0	1,2	1,83	2,46
27+0	1,24	1,87	2,5
28+0	1,28	1,91	2,54
29+0	1,31	1,94	2,57
30+0	1,32	1,95	2,58
31+0	1,33	1,96	2,59
32+0	1,32	1,95	2,58
33+0	1,3	1,93	2,56
34+0	1,27	1,9	2,53
35+0	1,22	1,85	2,48
36+0	1,17	1,8	2,43
37+0	1,1	1,73	2,36
38+0	1,02	1,65	2,28
39+0	0,93	1,56	2,2
40+0	0,83	1,46	2,09
41+0	0,72	1,35	1,98
42+0	0,6	1,23	1,86

Umb A RI Mai FG

Age	5%	50%	95%
30+0	0,57	0,66	0,74
31+0	0,56	0,64	0,73
32+0	0,55	0,63	0,72
33+0	0,54	0,62	0,7
34+0	0,53	0,61	0,7
35+0	0,53	0,61	0,69
36+0	0,52	0,6	0,68
37+0	0,51	0,6	0,68
38+0	0,51	0,59	0,67
39+0	0,51	0,59	0,67
40+0	0,51	0,59	0,67

Umb A RI Schaffer FG

Age	5%	50%	95%
20+0	0,63	0,76	0,89
21+0	0,62	0,75	0,88
22+0	0,61	0,74	0,87
23+0	0,6	0,73	0,86
24+0	0,59	0,72	0,85
25+0	0,58	0,71	0,84
26+0	0,57	0,7	0,83
27+0	0,56	0,69	0,82
28+0	0,55	0,68	0,81
29+0	0,54	0,67	0,8
30+0	0,53	0,66	0,79
31+0	0,52	0,65	0,78
32+0	0,51	0,64	0,77
33+0	0,5	0,63	0,76
34+0	0,49	0,62	0,75
35+0	0,48	0,61	0,74
36+0	0,47	0,6	0,73
37+0	0,46	0,59	0,72
38+0	0,45	0,58	0,71
39+0	0,44	0,57	0,7
40+0	0,43	0,56	0,69
41+0	0,41	0,55	0,68
42+0	0,4	0,54	0,67

Umb A PI Mai FG

Age	5%	50%	95%
30+0	0,88	1,06	1,25
31+0	0,85	1,03	1,22
32+0	0,82	1,01	0,19
33+0	0,8	0,98	1,17
34+0	0,78	0,96	1,15
35+0	0,76	0,95	1,14
36+0	0,75	0,94	1,13
37+0	0,75	0,94	1,12
38+0	0,75	0,93	1,12
39+0	0,76	0,94	1,13
40+0	0,76	0,95	1,13

Umb A PI Schaffer FG

Age	5%	50%	95%
20+0	1,09	1,43	1,77
21+0	1,05	1,39	1,74
22+0	1,01	1,36	1,7
23+0	0,98	1,32	1,66
24+0	0,94	1,28	1,63
25+0	0,91	1,25	1,59
26+0	0,87	1,22	1,56
27+0	0,84	1,18	1,53
28+0	0,81	1,15	1,49
29+0	0,78	1,12	1,46
30+0	0,75	1,09	1,43
31+0	0,72	1,06	1,4
32+0	0,69	1,03	1,38
33+0	0,66	1	1,35
34+0	0,63	0,98	1,32
35+0	0,61	0,95	1,3
36+0	0,58	0,93	1,27
37+0	0,56	0,9	1,25
38+0	0,54	0,88	1,22
39+0	0,51	0,86	1,2
40+0	0,49	0,84	1,18
41+0	0,47	0,81	1,16
42+0	0,45	0,8	1,14

Left Uterin RI Schaffer FG

Age	5%	50%	95%
20w0d	0.34	0.47	0.61
21w0d	0.33	0.46	0.60
22w0d	0.32	0.45	0.59
23w0d	0.31	0.45	0.58
24w0d	0.30	0.44	0.57
25w0d	0.30	0.43	0.57
26w0d	0.29	0.42	0.56
27w0d	0.28	0.42	0.55
28w0d	0.28	0.41	0.55
29w0d	0.27	0.41	0.54
30w0d	0.27	0.40	0.54
31w0d	0.26	0.40	0.53
32w0d	0.26	0.39	0.53
33w0d	0.25	0.39	0.52
34w0d	0.25	0.38	0.52
35w0d	0.24	0.38	0.52
36w0d	0.24	0.38	0.51
37w0d	0.24	0.37	0.51
38w0d	0.24	0.37	0.51
39w0d	0.23	0.37	0.51
40w0d	0.23	0.37	0.50
41w0d	0.23	0.37	0.50
42w0d	0.23	0.37	0.50

Left Uterin PI Schaffer

Age	5%	50%	95%
20w0d	0.44	0.74	1.04
21w0d	0.42	0.72	1.02
22w0d	0.40	0.70	1.00
23w0d	0.38	0.68	0.98
24w0d	0.36	0.66	0.96
25w0d	0.34	0.64	0.95
26w0d	0.33	0.63	0.93
27w0d	0.31	0.61	0.91
28w0d	0.30	0.60	0.90
29w0d	0.28	0.58	0.89
30w0d	0.27	0.57	0.87
31w0d	0.26	0.56	0.86
32w0d	0.25	0.55	0.85
33w0d	0.24	0.54	0.84
34w0d	0.23	0.53	0.84
35w0d	0.22	0.53	0.83
36w0d	0.22	0.52	0.82
37w0d	0.21	0.52	0.82
38w0d	0.21	0.51	0.81
39w0d	0.21	0.51	0.81
40w0d	0.20	0.51	0.81
41w0d	0.20	0.51	0.81
42w0d	0.20	0.51	0.81

Right Uterin RI Schaffer FG

Age	5%	50%	95%
20w0d	0.34	0.47	0.61
21w0d	0.33	0.46	0.60
22w0d	0.32	0.45	0.59
23w0d	0.31	0.45	0.58
24w0d	0.30	0.44	0.57
25w0d	0.30	0.43	0.57
26w0d	29	0.42	0.56
27w0d	0.28	0.42	0.55
28w0d	0.28	0.41	0.55
29w0d	0.27	0.41	0.54
30w0d	0.27	0.40	0.54
31w0d	0.26	0.40	0.53
32w0d	0.26	0.39	0.53
33w0d	0.25	0.39	0.52
34w0d	0.25	0.38	0.52
35w0d	0.24	0.38	0.52
36w0d	0.24	0.38	0.51
37w0d	0.24	0.37	0.51
38w0d	0.24	0.37	0.51
39w0d	0.23	0.37	0.51
40w0d	0.23	0.37	0.50
41w0d	0.23	0.37	0.50
42w0d	0.23	0.37	0.50

Right Uterin RI Schaffer FG

Age	5%	50%	95%
20w0d	0.34	0.47	0.61
21w0d	0.33	0.46	0.60
22w0d	0.32	0.45	0.59
23w0d	0.31	0.45	0.58
24w0d	0.30	0.44	0.57
25w0d	0.30	0.43	0.57
26w0d	29	0.42	0.56
27w0d	0.28	0.42	0.55
28w0d	0.28	0.41	0.55
29w0d	0.27	0.41	0.54
30w0d	0.27	0.40	0.54
31w0d	0.26	0.40	0.53
32w0d	0.26	0.39	0.53
33w0d	0.25	0.39	0.52
34w0d	0.25	0.38	0.52
35w0d	0.24	0.38	0.52
36w0d	0.24	0.38	0.51
37w0d	0.24	0.37	0.51
38w0d	0.24	0.37	0.51
39w0d	0.23	0.37	0.51
40w0d	0.23	0.37	0.50
41w0d	0.23	0.37	0.50
42w0d	0.23	0.37	0.50

Right Uterin PI Schaffer FG

Age	5%	50%	95%
20w0d	0.44	0.74	1.04
21w0d	0.42	0.72	1.02
22w0d	0.40	0.70	1.00
23w0d	0.38	0.68	0.98
24w0d	0.36	0.66	0.96
25w0d	0.34	0.64	0.95
26w0d	0.33	0.63	0.93
27w0d	0.31	0.61	0.91
28w0d	0.30	0.60	0.90
29w0d	0.28	0.58	0.89
30w0d	0.27	0.57	0.87
31w0d	0.26	0.56	0.86
32w0d	0.25	0.55	0.85
33w0d	0.24	0.54	0.84
34w0d	0.23	0.53	0.84
35w0d	0.22	0.53	0.83
36w0d	0.22	0.52	0.82
37w0d	0.21	0.52	0.82
38w0d	0.21	0.51	0.81
39w0d	0.21	0.51	0.81
40w0d	0.20	0.51	0.81
41w0d	0.20	0.51	0.81
42w0d	0.20	0.51	0.81

27.3 Formulas

- Estimated Fetal Weight EFW, author Hadlock

Hadlock (AC, FL)
Log10(EFW) = 1.304+(0.05281*AC)+(0.1938*Fl)-(0.004*FL)

Hadlock(BPD,AC,FL)
Log10(EFW) = 1.335-(0.0034*AC*FL)+(0.0316*BPD)+(0.0457*AC)+(0.1623*FL)

Hadlock(HC,AC,FL)
Log10(EFW) = 1.326-(0.00326*AC*FL)+(0.0107*HC)+(0.0438*AC)+(0.158*FL)

Hadlock(BPD,HC,AC,FL)
Log10(EFW) = 1.3596-(0.00386*AC*FL)+(0.0064*HC)+(0.00061*BPD*AC)+(0.0424*AC)+(0.174*FL)

EFW in grammes (g), HC, FL, AC et BPD in centimètres (cm).
Hadlock FP, Harris RB, Matinex-Poyer J «In utero analysis of fetal growth: A sonographic weight standard» Radiology 181: 129-133,1991.

- HC according to BPD and OFD : HC = ((BPD + OFD)/2) * 3.1416

- Conception, Due Date, and GA by LMP

Conception = LMP + cycle(28) - luteal(14)
Due Date = Conception + 266 days
GA by LMP = 14 + 266 - (Due Date - <today>).
(formulas in days)

- Cephalic Index CI : CI = (BPD /OFD) * 100

- FL/HC ratio = FL/HC
- FL/AC ratio = FL/AC
- HC/AC ratio = HC/AC
- FL/BPD ratio = FL/BPD

28. Maintenance of the device

Repairing of the device:
None of the parts of the device can be repaired by any person who has not been authorized by the manufacturer. Only a technician who has been trained and qualified by ECM can intervene for reparation of the device. In case of breakdown or fault in the functioning of the device, contact your distributor. You will find the address of your distributor on the first page of this manual.

29. Factory protocols for each application

APPLICATION: GENERAL			
Mode B, CFM, Anatomic M	**Measure tool**	**Measurement**	**Result**
	Distance	Distance	Distance
	Ellipse	Ellipse	Circumference
			Surface
	Trace		Circumference
			Surface
	% Stenosis (Distance)	ID	Ratio of 2 distances
		ED	
	% Stenosis (Surface)	IS	Ratio of 2 surfaces
		ES	
	Ellipsoidal volume	Volume (4/3 pi x a x a x b (a is the smallest axis)	Volume
	3D Volume	Volume 4/3 pi x W/2 x H/2 x D/2	Volume
	Distance Ratio	Distance A	A/B
		Distance B	
	Surface Ratio	Surface A	A/B
		Surface B	
	Angle	Angle	Angle
	Intima Media	Thickness	Thickness

APPLICATION: GENERAL		
Mode PW	**Measure tool**	**Measurement**
	Doppler Auto	RI
		PI
		Speed Systole
		Speed Diastole
		S/D
	Doppler Manual	RI
		Speed Systole
		Speed Diastole
		S/D
	Doppler Manual Trace	Systole
		Diastole
		RI
		PI
		S/D
	Heart Rate	Rate
	Acceleration	Acceleration Time
		Acceleration

APPLICATION: GENERAL			
Mode M	**Measure tool**	**Measurement**	**Result**
	% Stenosis (Distance)	ID	Ratio Distance
		ED	
	Distance (y) Ratio	Distance A	A/B
		Distance B	
	Time and Distance	Time and Distance	Distance
			Time
			D/T
	Heart Rate	Rate	Rate

APPLICATION: ABDOMINAL		
Mode B, CFM	**Organ**	**Measurement**
	Spleen	Dist. A
		Dist. B
	Left Kidney	Width
		Height
	Right Kidney	Width
		Height
	Pancreas	Head
		Body
		Tail
		Duct
	Gall Bladder	Width
		Height
		Wall T
	Liver	Width
		Height
	Prostate	Width
		Height
		Depth
	Thyroid	Width
		Height
		Depth
	Aorta Diameter	Diameter

APPLICATION: ABDOMINAL		
Mode PW	**Organ**	**Measure tool**
	Left Renal Artery	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Right Renal Artery	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Hepatic Artery	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Portal Vein	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Aorta	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Doppler Auto	RI
		PI
		Speed Systole
		Speed Diastole
		S/D
	Doppler Manual Trace	RI
		PI
		Speed Systole
		Speed Diastole
		S/D
	Doppler Manual	RI
		Speed Systole
		Speed Diastole
		S/D
	Heart Rate	Rate
	Acceleration	Acceleration Time
		Acceleration

APPLICATION: ABDOMINAL		
Mode M	**Organ**	**Measurement**
	Left Renal Artery	Heart Rate
	Right Renal Artery	Heart Rate
	Hepatic Artery	Heart Rate
	Portal Vein	Heart Rate
	Aorta	Heart Rate

APPLICATION: ANESTHESIA			
Mode B, CFM	**Measure tool**	**Measurement**	**Result**
	Distance	Distance	Distance
	Ellipse	Ellipse	Circumference
			Surface
	Trace		Circumference
			Surface

APPLICATION : CARDIOLOGY			
Mode B, CFM	**Measure tool**	**Measurement**	**Result**
	Simpson	Diastole Volume	EDV
		Systole Volume	ESV
			Stroke volume
			Cardiac output
			Ejection fraction
	Simpson 2 & 4 chambers	ED 2 chambers	EDV
		ES 2 chambers	ESV
		ED 4 chambers	Stroke volume
		ES 4 chambers	Cardiac output
			Ejection fraction
	Cardiac area-length	Diastole Volume	EDV
		Systole Volume	ESV
			Stroke volume
			Cardiac output
			Ejection fraction
	Teichholz Cross Section	Diastole	EDV
		Systole	ESV
		RV Diameter	Stroke volume
			Cardiac output
			Ejection fraction
	Cube Cross section	Diastole	EDV
		Systole	ESV
		RV Diameter	Stroke volume
			Cardiac output
			Ejection fraction
	Gibson Cross Section	Systole	EDV
		Diastole	ESV
		RV Diameter	Stroke volume
			Cardiac output
			Ejection fraction
	Bullet Method	Diastole LVL	EDV
		Systole LVL	ESV
		Diastole LVAM	Stroke volume
		Systole LVAM	Cardiac output
			Ejection fraction
	Biplane Method	Diastole LVAL	EDV
		Systole LVAL	ESV
		Diastole LVAM ID	Stroke volume
		Systole LVAM ID	Cardiac output
			Ejection fraction
	Body Surface Area		Area

APPLICATION : CARDIOLOGY			
Mode PW	**Organ**	**Measure tool**	**Result**
		Heart Rate	Rate
		Body Surface Area	Area
		Time	Time
		Speed	Speed
		Manual acceleration	Acceleration time
			Acceleration
	Aortic valve	Doppler Auto	
		Doppler manual	
		Doppler Manual Trace	
		Heart Rate	
		Time	
		Speed	
		Flow	
		Manual Acceleration	
		Acceleration	
	Pulmonary valve	Doppler Auto	
		Doppler manual	
		Doppler Manual Trace	
		Heart Rate	
		Time	
		Speed	
		Flow	
		Manual Acceleration	
		Acceleration	
	Mitral valve	Doppler Auto	
		Doppler manual	
		Doppler Manual Trace	
		Heart Rate	
		Time	
		Speed	
		Flow	
		Manual Acceleration	
		Acceleration	
	Tricuspid valve	Doppler Auto	
		Doppler manual	
		Doppler Manual Trace	
		Heart Rate	
		Time	
		Speed	
		Flow	
		Manual Acceleration	
		Acceleration	
	Doppler Auto	RI	
		PI	
		Speed Systole	
		Speed Diastole	
		S/D	
	Doppler Manual	RI	
		Speed Systole	
		Speed Diastole	
		S/D	
	Doppler Manual Trace	Systole	
		Diastole	
		RI	
		PI	
		S/D	
	Heart Rate	Rate	
	Time	Time	
	Speed	Speed	
	Flow	Flow	VAVG
			Diameter

			Surface
	Manual acceleration	Acceleration time	
		Acceleration	
	Acceleration	Acceleration Time	
		Acceleration	

APPLICATION : CARDIOLOGY			
Mode CW	**Organ**	**Measure tool**	**Result**
		Body Surface Area	Area
		Time	Time
		Speed	Speed
		Manual acceleration	Acceleration time
			Acceleration
	Aortic valve	Time	
		Speed	
		Manual Acceleration	Acceleration time
			Acceleration
	Pulmonary valve	Time	
		Speed	
		Manual Acceleration	Acceleration time
			Acceleration
	Mitral valve	Time	
		Speed	
		Manual Acceleration	Acceleration time
			Acceleration
	Tricuspid valve	Time	
		Speed	
		Manual Acceleration	Acceleration time
			Acceleration

APPLICATION : CARDIOLOGY			
Mode Anatomic M	**Measure tool**	**Measurement**	**Result**
	Heart Rate		Rate
	Teichholz	Diastole	EDV
		Systole	ESV
			Stroke volume
			Cardiac output
			Ejection fraction
	Teichholz Cross Section	Diastole	EDV
		Systole	ESV
		RV Diameter	Stroke volume
			Cardiac output
			Ejection fraction
	Cube Cross section	Diastole	EDV
		Systole	ESV
		RV Diameter	Stroke volume
			Cardiac output
			Ejection fraction
	Gibson Cross Section	Systole	EDV
		Diastole	ESV
		RV Diameter	Stroke volume
			Cardiac output
			Ejection fraction

APPLICATION : CARDIOLOGY				
Mode M	**Organ**	**Measure tool**	**Measurement**	**Result**
		Heart Rate		Rate
		Teichholz	Diastole	EDV
			Systole	ESV
				Stroke volume
				Cardiac output
				Ejection fraction
		Body Surface Area		Area
		Time		Time
	Aortic valve	Heart rate		Rate
		Time		Time
	Pulmonary valve	Heart rate		Rate
		Time		Time
	Mitral valve	Heart rate		Rate
		Time		Time
	Tricuspid valve	Heart rate		Rate
		Time		Time

APPLICATION: GYNECOLOGY		
Mode B, CFM	**Organ**	**Measurement**
	Left ovary	Width
		Height
		Depth
	Right Ovary	Width
		Height
		Depth
	Uterus	Width
		Height
		Depth
	Ovarian follicle	Distance 1
		Distance 2
		Distance 3
	Endometrium thickness	Thickness

APPLICATION: GYNECOLOGY		
Mode PW	**Organ**	**Measure tool**
	Left Uterine Artery	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Right Uterine Artery	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Left Ovary Artery	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Right Ovary Artery	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Doppler Auto	RI
		PI
		Speed Systole
		Speed Diastole
		S/D
	Doppler Manual Trace	RI
		PI
		Speed Systole
		Speed Diastole
		S/D
	Doppler Manual	RI
		Speed Systole
		Speed Diastole
		S/D
	Heart Rate	Rate
	Acceleration	Acceleration Time
		Acceleration

APPLICATION: GYNECOLOGY		
Mode M	**Organ**	**Measurement**
	Left Uterine Artery	Heart Rate
	Right Uterine Artery	Heart Rate
	Left Ovary Artery	Heart Rate
	Right Ovary Artery	Heart Rate

APPLICATION: OBSTETRICAL			
Mode B/CFM	**Abbreviation**	**Organ**	**Author**
	CRL	Crown-Rump Lenght	Hadlock
			Hansmann
			Osaka
			Rempen
			Robinson
			Tokyo
	BPD	Biparietal Diameter	Chitty (O-O)
			CFEF
			Hadlock
			Hansmann
			Osaka
			Tokyo
	GS	Gestational Sac	Rempen
			Hansmann
			Tokyo
	AC	Abdominal Circumference	Chitty (drvd)
			Chitty (pltd)
			CFEF
			Hadlock
			Jeanty
			Tokyo
	FL	Femur lenght	Chitty
			CFEF
			Hadlock
			Hansmann
			Osaka
			Tokyo
	HC	Head circumference	Chitty (drvd)
			Chitty (pltd)
			CFEF
			Hadlock
			Hansmann
	Head Area	Head Area	Chitty
	TAD	Transverse Abdominal Diameter	CFEF
	ThD	Thoracic Diameter	Hansmann
	FTA	Fetal Trunk cross-sect. Area	Osaka
	APAD	Ant. Post. Abdominal Diam.	Merz
	Trans. & Ant. Trunk Diam		Tokyo
	Clavicle	Clavicle	Yarkoni
	NT	Nuchal Tranlucency	
	OFD	Occipito Frontal Diameter	Chitty
			Hansman
	Facial angle	Facial angle	
	EFW ac, fl	Estimated Fetal Weight	Hadlock
	EFW bpd, ac, fl	Estimated Fetal Weight	Hadlock
	EFW hc, ac, fl	Estimated Fetal Weight	Hadlock
	EFW hc, ac, fl, bpd	Estimated Fetal Weight	Hadlock
	EFW bpd, ac	Estimated Fetal Weight	Shepard
	EFW bpd, thd	Estimated Fetal Weight	Hansmann
	EFW ac	Estimated Fetal Weight	Cambell
	EFW bpd, fta, fl	Estimated Fetal Weight	Osaka
	EFW bpd, aptd, ttd, fl	Estimated Fetal Weight	Tokyo
	FL/HC Ratio		
	HC/AC Ratio		
	FL/AC Ratio		
	FL/BPD Ratio		
	Amniotic Fluid Index		
	HC from BPD & OFD		
	CI	Cephalic Index	
	GA Average		

APPLICATION: OBSTETRICAL				
Mode PW	**Abbreviation**	**Organ**	**Measure tool**	**Author**
	Fetal Heart Rate			
	GA Average			
	Fetal Aorta		Doppler Auto	Schaffer
				Mai
			Doppler Manual	Schaffer
				Mai
			Doppler Manual	Trace
				Schaffer
			Heart Rate	Mai
			Acceleration	
	Left Uterine		Doppler Auto	Schaffer
			Doppler Manual	Schaffer
			Doppler Manual Trace	Schaffer
				Mai
			Heart Rate	
			Acceleration	
	Right Uterine		Doppler Auto	Schaffer
			Doppler Manual	Schaffer
			Doppler Manual Trace	Schaffer
				Mai
			Heart Rate	
			Acceleration	
	MCA	Middle Cerebral Artery	Doppler Auto	Mai
				Schaffer
			Doppler Manual	Mai
				Schaffer
			Doppler Manual Trace	Schaffer
				Mai
			Acceleration	
	UA	Umbilical Artery	Doppler Auto	Mai
				Schaffer
			Doppler Manual	Mai
				Schaffer
			Doppler Manual Trace	Schaffer
				Mai
			Heart Rate	
			Acceleration	
		Doppler Auto	RI	
			PI	
		Doppler Manual	RI	
		Doppler Manual Trace	RI	
			PI	
		Heart Rate	Rate	
		Acceleration	Acceleration Time	
			Acceleration	

APPLICATION: OBSTETRICAL			
Mode M	**Abbreviation**	**Organ**	**Measure tool**
	FHR		Fetal Heart Rate
	GA Average		
	Fetal Aorta		Heart Rate
	Left Uterine		Heart Rate
	Right Uterine		Heart Rate
	MCA	Middle Cerebral Artery	Heart Rate
	UA	Umbilical Artery	Heart Rate

APPLICATION: PEDIATRICS			
Mode B, CFM	**Organ**	**Measurement**	**Result**
	Left Hip Joint	Angles	Alpha
			Beta
	Right Hip Joint	Angles	Alpha
			Beta
	Spleen	Dist. A	
		Dist. B	
	Left Kidney	Width	
		Height	
	Right Kidney	Width	
		Height	
	Pancreas	Head	
		Body	
		Tail	
		Duct	
	Gall bladder	Width	
		Height	
		Wall T	
	Liver	Width	
		Height	
	Bladder	Width	W x H x D x Pi/6
		Height	Volume
		Depth	

APPLICATION: PEDICATRICS		
Mode PW	**Organ**	**Measure tool**
	Left Renal Artery	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Right Renal Artery	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Doppler Auto	RI
		PI
		Speed Systole
		Speed Diastole
		S/D
	Doppler Manual Trace	RI
		PI
		Speed Systole
		Speed Diastole
		S/D
	Doppler Manual	RI
		Speed Systole
		Speed Diastole
		S/D
	Acceleration	Acceleration Time
		Acceleration

APPLICATION: PEDIATRICS		
Mode M	**Organ**	**Measurement**
	Left Renal Artery	Heart Rate
	Right Renal Artery	Heart Rate

APPLICATION: SMALL PARTS			
Mode B, CFM	**Organ**	**Measurement**	**Result**
	Testes	Width	W x H x D x Pi/6
		Height	Volume
		Depth	
	Thyroid	Width	W x H x D x 0.479
		Height	Volume
		Depth	
	Breast	Width	W x H x D x Pi/6
		Height	Volume
		Depth	

APPLICATION: SMALL PARTS		
Mode PW	**Organ**	**Measure tool**
	Breast	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Doppler Auto	RI
		PI
		Speed Systole
		Speed Diastole
		S/D
	Doppler Manual Trace	RI
		PI
		Speed Systole
		Speed Diastole
		S/D
	Doppler Manual	RI
		Speed Systole
		Speed Diastole
		S/D
	Acceleration	Acceleration Time
		Acceleration

APPLICATION: SMALL PARTS		
Mode M	**Organ**	**Measurement**
	Breast	Heart Rate

APPLICATION: UROLOGY			
Mode B, CFM	**Organ**	**Measurement**	**Result**
	Bladder	Width	W x H x D x Pi/6
		Height	Volume
		Depth	
	Prostate	Width	W x H x D x 0.52
		Height	Volume
		Depth	
	Testes	Width	W x H x D x Pi/6
		Height	Volume
		Depth	
	Left kidney	Width	
		Height	
	Right kidney	Width	
		Height	

APPLICATION: UROLOGY		
Mode PW	**Organ**	**Measure tool**
	Left Renal Artery	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Right Renal Artery	Doppler Auto
		Doppler Manual
		Doppler Manual Trace
		Heart Rate
		Acceleration
	Doppler Auto	RI
		PI
		Speed Systole
		Speed Diastole
		S/D
	Doppler Manual Trace	RI
		PI
		Speed Systole
		Speed Diastole
		S/D
	Doppler Manual	RI
		Speed Systole
		Speed Diastole
		S/D
	Acceleration	Acceleration Time
		Acceleration

APPLICATION: UROLOGY		
Mode M	**Organ**	**Measurement**
	Left Renal Artery	Heart Rate
	Right Renal Artery	Heart Rate

APPLICATION: VASCULAR			
B,CFM	**Abbreviation**	**Organ**	**Measure tool**
	Intima Media		Thickness
	Left Com.Carotid Artery	Left Common Carotid Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Com.Carotid Artery	Right Common Carotid Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Ext.Carotid Artery	Left External Carotid Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Ext.Carotid Artery	Right External Carotid Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Int.Carotid Artery	Left Internal Carotid Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Int.Carotid Artery	Right Internal Carotid Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Vertebral Artery	Left Vertebral Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Vertebral Artery	Right Vertebral Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Subclavian Artery	Left Subclavian Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Subclavian Artery	Right Subclavian Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Innominate Artery	Innominate Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Humeral Artery	Left Humeral Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Humeral Artery	Right Humeral Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Brachial Artery	Left Brachial Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Brachial Artery	Right Brachial Artery	Distance
			Surface

APPLICATION: VASCULAR			
B,CFM	**Abbreviation**	**Organ**	**Measure tool**
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Ulnar Artery	Left Ulnar Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Ulnar Artery	Right Ulnar Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Radial Artery	Left Radial Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Radial Artery	Right Radial Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Ext.Iliac Artery	Left Exterior Iliac Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Ext. Iliac Artery	Right Exterior Iliac Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Com. Femoral Artery	Left Common Femoral Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Com. Femoral Artery	Right Common Femoral Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Profonda Artery	Left Profonda Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Profonda Artery	Right Profonda Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Tibioperoneal T.	Left Tibioperoneal Trunk	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Tibioperoneal T.	Right Tibioperoneal Trunk	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left Peroneal Artery	Left Peroneal Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right Peroneal Artery	Right Peroneal Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left DP Artery	Left Dorsalis Pedis Artery	Distance
			Surface

APPLICATION: VASCULAR			
B,CFM	**Abbreviation**	**Organ**	**Measure tool**
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right DP Artery	Right Dorsalis Pedis Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left SFA Artery	Left Superficial Femoral Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right SFA Artery	Right Superficial Femoral Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left AT Artery	Left Anterior Tibial Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right AT Artery	Right Anterior Tibial Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Left PT Artery	Left Posterior Tibial Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)
	Right PT Artery	Right Posterior Tibial Artery	Distance
			Surface
			%Stenosis (Distance)
			% Stenosis (Surface)

APPLICATION: VASCULAR			
Mode: PW	**Abbreviation**	**Organ**	**Measure tool**
	ICA/CCA		ICA/CCA Ratio
	Left Com.Carotid Artery	Left Common Carotid Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right Com.Carotid Artery	Right Common Carotid Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left Ext.Carotid Artery	Left External Carotid Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right Ext.Carotid Artery	Right External Carotid Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left Int.Carotid Artery	Left Internal Carotid Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right Int.Carotid Artery	Right Internal Carotid Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left Vertebral Artery	Left Vertebral Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow

APPLICATION: VASCULAR			
Mode: PW	**Abbreviation**	**Organ**	**Measure tool**
			Manual Acceleration
			Acceleration
	Right Vertebral Artery	Right Vertebral Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left Subclavian Artery	Left Subclavian Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right Subclavian Artery	Right Subclavian Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Innominate Artery	Innominate Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left Humeral Artery	Left Humeral Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right Humeral Artery	Right Humeral Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left Brachial Artery	Left Brachial Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow

APPLICATION: VASCULAR			
Mode: PW	**Abbreviation**	**Organ**	**Measure tool**
			Manual Acceleration
			Acceleration
	Right Brachial Artery	Right Brachial Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left Ulnar Artery	Right Ulnar Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right Ulnar Artery	Right Ulnar Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left Radial Artery	Left Radial Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right Radial Artery	Right Radial Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left Ext.Iliac Artery	Left Exterior Iliac Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right Ext.Iliac Artery	Right Exterior Iliac Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow

APPLICATION: VASCULAR			
Mode: PW	**Abbreviation**	**Organ**	**Measure tool**
			Manual Acceleration
			Acceleration
	Left Com. Femoral Artery	Left Common Femoral Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right Com.Femoral Artery	Right Common Femoral Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left Profonda Artery	Left Profonda Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right Profonda Artery	Right Profonda Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left Tibioperoneal T.	Left Tibioperoneal Trunk	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right Tibioperoneal T.	Right Tibioperoneal Trunk	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left Peroneal Artery	Left Peroneal Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow

APPLICATION: VASCULAR			
Mode: PW	**Abbreviation**	**Organ**	**Measure tool**
			Manual Acceleration
			Acceleration
	Right Peroneal Artery	Right Peroneal Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left DP Artery	Left Dorsalis Pedis Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right DP Artery	Right Dorsalis Pedis Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left SFA Artery	Left Superficial Femoral Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right SFA Artery	Right Superficial Femoral Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Left AT Artery	Left Anterior Tibial Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right AT Artery	Right Anterior Tibial Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow

APPLICATION: VASCULAR			
Mode: PW	**Abbreviation**	**Organ**	**Measure tool**
			Manual Acceleration
			Acceleration
	Left PT Artery	Left Posterior Tibial Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration
	Right PT Artery	Right Posterior Tibial Artery	Doppler Auto
			Doppler Manual
			Doppler Manual Trace
			Heart Rate
			Time
			Speed
			Flow
			Manual Acceleration
			Acceleration

Doppler Auto	RI
	PI
	Speed Systole
	Speed Diastole
	S/D
Doppler Manual	RI
	Speed Systole
	Speed Diastole
	S/D

ICA/CCA Ratios	L. ICA/CCA D
	L. ICA/CCA S
	R. ICA/CCA D
	R. ICA/CCA S

APPLICATION : VASCULAR			
Mode: M	**Abbreviation**	**Organ**	**Measurement**
	Left Com.Carotid Artery	Left Common Carotid Artery	Heart Rate
			Time
	Right Com.Carotid Artery	Right Common Carotid Artery	Heart Rate
			Time
	Left Ext.Carotid Artery	Left External Carotid Artery	Heart Rate
			Time
	Right Ext.Carotid Artery	Right External Carotid Artery	Heart Rate
			Time
	Left Int.Carotid Artery	Left Internal Carotid Artery	Heart Rate
	Right Int.Carotid Artery	Right Internal Carotid Artery	Heart Rate
			Time
	Left Vertebral Artery	Left Vertebral Artery	Heart Rate
			Time
	Right Vertebral Artery	Right Vertebral Artery	Heart Rate
			Time
	Left Subclavian Artery	Left Subclavian Artery	Heart Rate
			Time
	Right Subclavian Artery	Right Subclavian Artery	Heart Rate
			Time
	Innominate Artery	Innominate Artery	Heart Rate
			Time

	Left Humeral Artery	Left Humeral Artery	Heart Rate
			Time
	Right Humeral Artery	Right Humeral Artery	Heart Rate
			Time
	Left Brachial Artery	Left Brachial Artery	Heart Rate
			Time
	Right Brachial Artery	Right Brachial Artery	Heart Rate
			Time
	Left Ulnar Artery	Left Ulnar Artery	Heart Rate
			Time
	Right Ulnar Artery	Right Ulnar Artery	Heart Rate
			Time
	Left Radial Artery	Left Radial Artery	Heart Rate
			Time
	Right Radial Artery	Right Radial Artery	Heart Rate
			Time
	Left Ext.Iliac Artery	Left Exterior Iliac Artery	Heart Rate
			Time
	Right Ext.Iliac Artery	Right Exterior Iliac Artery	Heart Rate
			Time
	Left Com. Femoral Artery	Left Common Femoral Artery	Heart Rate
			Time
	Right Com. Femoral Artery	Right Common Femoral Artery	Heart Rate
			Time
	Left Profonda Artery	Left Profonda Artery	Heart Rate
			Time
	Right Profonda Artery	Right Profonda Artery	Heart Rate
			Time
	Left Tibioperoneal T.	Left Tibioperoneal Trunk	Heart Rate
			Time
	Right Tibioperoneal T.	Right Tibioperoneal Trunk	Heart Rate
			Time
	Left Peroneal Artery	Left Peroneal Artery	Heart Rate
			Time
	Right Peroneal Artery	Right Peroneal Artery	Heart Rate
			Time
	Left DP Artery	Left Dorsalis Pedis Artery	Heart Rate
			Time
	Right DP Artery	Right Dorsalis Pedis Artery	Heart Rate
			Time
	Left SFA Artery	Left Superficial Femoral Artery	Heart Rate
			Time
	Right SFA Artery	Right Superficial Femoral Artery	Heart Rate
			Time
	Left AT Artery	Left Anterior Tibial Artery	Heart Rate
			Time
	Right AT Artery	Right Anterior Tibial Artery	Heart Rate
			Time
	Left PT Artery	Left Posterior Tibial Artery	Heart Rate
			Time
	Right PT Artery	Right Posterior Tibial Artery	Heart Rate
			Time